



ANALYTICAL REPORT

Job Number: 320-29732-1

Job Description: TT: PFAS, Brunswick, Discharge

For:

Tetra Tech, Inc. Foster Plaza VII 661 Anderson Drive Foster Plaza 7 Pittsburgh, PA 15220

Attention: Jeff Orient

Approved for release David R Alltucker Project Manager I 7/30/2017 12:31 PM

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Definitions/Glossary

Client: Tetra Tech, Inc.

TestAmerica Job ID: 320-29732-1

Project/Site: TT: PFAS, Brunswick, Discharge

Qualifiers

LCMS

Qualifier	Qualifier Description
Q	One or more quality control criteria failed.
M	Manual integrated compound.
U	Undetected at the Limit of Detection.
J	Estimated: The analyte was positively identified; the quantitation is an estimation
E	Result exceeded calibration range.
D	The reported value is from a dilution.
Н	Sample was prepped or analyzed beyond the specified holding time

Glossary

Glossary	
Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

Job Narrative 320-29732-1

Receipt

The samples were received on 7/7/2017 10:00 AM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperature of the cooler at receipt was 3.4° C.

LCMS

Method(s) 537 (Modified): The first level standard from the initial calibration curve is used to evaluate the tune criteria. The instrument mass windows are set at +/- 0.5amu; therefore, detection of the analyte serves as verification that the assigned mass is within +/- 0.5amu of the true value, which meets the DoD/DOE QSM tune criterion.

Method(s) 3535, 537 (Modified): Due to the sporadic recovery performance for the labeled analyte 13C8-FOSA, we are temporarily increasing the reporting limit (RL) for the target analyte FOSA in order to provide better confidence in its reported value. The RL for FOSA has been increased to the same concentration as that fortified into the laboratory control sample (LCS). At this concentration, the LCS demonstrates acceptable FOSA recovery regardless of the recovery of its labeled analog, 13C8-FOSA, which is used to quantitate FOSA. Thus, indicating sufficient analytical performance to support this RL increase. Techniques to improve the recovery performance of 13C8-FOSA are currently underway.

Method(s) 537 (Modified): The Isotope Dilution Analyte (IDA) recovery associated with the following samples is below the method recommended limit for 13C8 FOSA: (LCS 320-174599/2-A) and (LCSD 320-174599/3-A). Generally, data quality is not considered affected if the IDA signal-to-noise ratio is greater than 10:1, which is achieved for all IDA in the samples. Reanalysis confirms these results.

Method(s) 537 (Modified): The Isotope Dilution Analyte (IDA) recovery associated with the following samples are below the method recommended limit for 13C8 FOSA: TP-PFC-019-TPI (320-29732-1), TP-PFC-019-MID-CARBON (320-29732-2), TP-PFC-019-TPE (320-29732-3) and (LCS 320-175097/2-A). Generally, data quality is not considered affected if the IDA signal-to-noise ratio is greater than 10:1, which is achieved for all IDA in the sample. Reanalysis confirms the results.

Method(s) 537 (Modified): The laboratory control sample duplicate (LCSD) for preparation batch 320-175074 and analytical batch 320-175951 recovered outside control limits for the following analyte: Perfluorotetradecanoic acid (PFTeA). This analyte was detected in the associated samples. The samples were re-extracted, however, PFTeA in the re-extracted LCSD was also outside of control limits. Due to insufficient sample volume, further re-extraction could not be performed. Results for PFTeA were reported from the re-extraction because the Laboratory Control Sample (LCS) was in control for this analyte.

Method(s) 537 (Modified): The concentration of Perfluorooctanesulfonic acid (PFOS) and Perfluorooctanoic acid (PFOA) associated with the following sample exceeded the instrument calibration range: TP-PFC-019-TPI (320-29732-1). These analytes have been qualified; however, the peaks did not saturate the instrument detector. The sample was run at dilution and both sets of data have been reported.

Method(s) 537 (Modified): The Isotope Dilution Analyte (IDA) recovery associated with the following samples is below the method recommended limit for 13C8 FOSA: TP-PFC-019-TPE-D (320-29732-4). Reanalysis confirmed the result. Generally, data quality is not considered affected if the IDA signal-to-noise ratio is greater than 10:1, which is achieved for all IDA in the samples. All detection limits are below the lower calibration.

Method(s) 537 (Modified): The Isotope Dilution Analyte (IDA) recovery associated with the following sample is far below the method recommended limit for 13C8 FOSA: TP-PFC-019-TPE-D (320-29732-4). The sample was re-extracted outside of the recommended preparation holding time. Both sets of data have been reported.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

Organic Prep

Method(s) 3535: Approximately 250 mL of the aqueous portion of the following samples were decanted into a new polyethylene bottle prior to extraction due to the original sample bottle containing an excess amount of sediment which had the potential to clog the solid-phase column: TP-PFC-019-TPI (320-29732-1)

Method(s) 3535: Insufficient sample volume was available to perform a matrix spike/matrix spike duplicate (MS/MSD) associated with preparation batch 320-175074.

Method(s) 3535: Insufficient sample volume was available to perform a matrix spike/matrix spike duplicate (MS/MSD) associated with preparation batch 320-175742.

Method(s) 3535: The following sample was re-prepared outside of preparation holding time due to low FOSA IDA recoveries.:TP-PFC-019-TPE-D (320-29732-4).

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

Detection Summary

Client: Tetra Tech, Inc.

Project/Site: TT: PFAS, Brunswick, Discharge

TestAmerica Job ID: 320-29732-1

Client Sample ID: TP-PFC-019-TPI

Lab Sample ID: 320-29732-1

Analyte	Result	Qualifier	LOQ	DL	Unit	Dil Fac	D	Method	Prep Type
Perfluorobutanoic acid (PFBA)	77	M	2.4	0.45	ng/L		_	537 (Modified)	Total/NA
Perfluoropentanoic acid (PFPeA)	180		2.4	0.96	ng/L	1		537 (Modified)	Total/NA
Perfluorohexanoic acid (PFHxA)	350		2.4	0.77	ng/L	1		537 (Modified)	Total/NA
Perfluoroheptanoic acid (PFHpA)	66		2.4	0.78	ng/L	1		537 (Modified)	Total/NA
Perfluorooctanoic acid (PFOA)	1300	ME	2.4	0.73	ng/L	1		537 (Modified)	Total/NA
Perfluorononanoic acid (PFNA)	2.3	J	2.4	0.64	ng/L	1		537 (Modified)	Total/NA
Perfluorodecanoic acid (PFDA)	1.1	J	2.4	0.43	ng/L	1		537 (Modified)	Total/NA
Perfluorobutanesulfonic acid (PFBS)	52		2.4	0.90	ng/L	1		537 (Modified)	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	350		2.4	0.85	ng/L	1		537 (Modified)	Total/NA
Perfluoroheptanesulfonic Acid (PFHpS)	9.0	_	2.4		ng/L	1		537 (Modified)	Total/NA
Perfluorooctanesulfonic acid (PFOS)	370		3.9		ng/L	1		537 (Modified)	Total/NA
Perfluorooctane Sulfonamide (FOSA)	1.1		39		ng/L	1		537 (Modified)	Total/NA
Perfluorobutanoic acid (PFBA) - DL	80		24		ng/L	10		537 (Modified)	Total/NA
Perfluoropentanoic acid (PFPeA) - DL	190	D	24	9.6	ng/L	10		537 (Modified)	Total/NA
Perfluorohexanoic acid (PFHxA) - DL	350	D	24	7.7	ng/L	10		537 (Modified)	Total/NA
Perfluoroheptanoic acid (PFHpA) - DL	70	D	24	7.8	ng/L	10		537 (Modified)	Total/NA
Perfluorooctanoic acid (PFOA) - DL	1500	DM	24	7.3	ng/L	10		537 (Modified)	Total/NA
Perfluorodecanoic acid (PFDA) - DL	4.8	JD	24	4.3	ng/L	10		537 (Modified)	Total/NA
Perfluorotridecanoic Acid (PFTriA) - DL	5.6	JD	24	5.4	ng/L	10		537 (Modified)	Total/NA
Perfluorobutanesulfonic acid (PFBS) - DL	55	D	24		ng/L	10		537 (Modified)	Total/NA
Perfluorohexanesulfonic acid (PFHxS) - DL	360	D	24	8.5	ng/L	10		537 (Modified)	Total/NA
Perfluoroheptanesulfonic Acid (PFHpS) - DL	12	JD	24	7.0	ng/L	10		537 (Modified)	Total/NA
Perfluorooctanesulfonic acid (PFOS) - DL	360	D	39	12	ng/L	10		537 (Modified)	Total/NA
Perfluorooctane Sulfonamide (FOSA) - DL	18	JD	390		ng/L	10		537 (Modified)	Total/NA
Perfluorotetradecanoic acid (PFTeA) - RE	1.6	JMQ	2.4	0.39	ng/L	1		537 (Modified)	Total/NA

Client Sample ID: TP-PFC-019-MID-CARBON

Lab Sample ID: 320-29732-2

Analyte	Result	Qualifier	LOQ	DL	Unit	Dil Fac	Method	Prep Type
Perfluorobutanoic acid (PFBA)	100		2.5	0.46	ng/L		537 (Modified)	Total/NA
Perfluoropentanoic acid (PFPeA)	16		2.5	0.99	ng/L	1	537 (Modified)	Total/NA
Perfluorohexanoic acid (PFHxA)	1.2	J	2.5	0.78	ng/L	1	537 (Modified)	Total/NA
Perfluorooctane Sulfonamide (FOSA)	2.5	J	40	0.64	ng/L	1	537 (Modified)	Total/NA
Perfluorotetradecanoic acid (PFTeA) - RE	1.4	J M Q	2.5	0.40	ng/L	1	537 (Modified)	Total/NA

Client Sample ID: TP-PFC-019-TPE

Lab Sample ID: 320-29732-3

Analyte	Result (Qualifier	LOQ	DL	Unit	Dil Fac	D	Method	Prep Type
Perfluorobutanoic acid (PFBA)	85		2.4	0.44	ng/L	1	_	537 (Modified)	Total/NA
Perfluoropentanoic acid (PFPeA)	24		2.4	0.95	ng/L	1		537 (Modified)	Total/NA
Perfluorohexanoic acid (PFHxA)	6.1		2.4	0.76	ng/L	1		537 (Modified)	Total/NA
Perfluorooctanoic acid (PFOA)	0.76	JM	2.4	0.72	ng/L	1		537 (Modified)	Total/NA
Perfluorooctane Sulfonamide (FOSA)	2.1	J	39	0.61	ng/L	1		537 (Modified)	Total/NA

This Detection Summary does not include radiochemical test results.

Detection Summary

Client: Tetra Tech, Inc.

Project/Site: TT: PFAS, Brunswick, Discharge

TestAmerica Job ID: 320-29732-1

Client Sample ID: TP-PFC-019-TPI	E (Continued)
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Lab Sample ID: 320-29732-3

Analyte	Result	Qualifier	LOQ	DL	Unit	Dil Fac	D	Method	Prep Type
Perfluorotetradecanoic acid (PFTeA) -	1.5	JMQ	2.5	0.39	ng/L	1	_	537 (Modified)	Total/NA
RF									

Client Sample ID: TP-PFC-019-TPE-D

Lab Sample ID: 320-29732-4

Analyte	Result Qualifier	LOQ	DL Unit	Dil Fac D Meth	od Prep Type
Perfluorobutanoic acid (PFBA)	82	2.4	0.44 ng/L	1 537 (Modified) Total/NA
Perfluoropentanoic acid (PFPeA)	24	2.4	0.96 ng/L	1 537 (Modified) Total/NA
Perfluorohexanoic acid (PFHxA)	6.4	2.4	0.76 ng/L	1 537 (Modified) Total/NA

Client: Tetra Tech, Inc.

TestAmerica Job ID: 320-29732-1

Project/Site: TT: PFAS, Brunswick, Discharge

Client Sample ID: TP-PFC-019-TPI Lab Sample ID: 320-29732-1

Date Collected: 07/06/17 09:11 Matrix: Water Date Received: 07/07/17 10:00

Method: 537 (Modified) - Perfl Analyte		Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fa
Perfluorobutanoic acid (PFBA)	77		2.4	0.45	ng/L			07/23/17 16:16	
Perfluoropentanoic acid (PFPeA)	180		2.4		ng/L		07/20/17 10:13	07/23/17 16:16	
Perfluorohexanoic acid (PFHxA)	350		2.4		ng/L		07/20/17 10:13	07/23/17 16:16	
Perfluoroheptanoic acid (PFHpA)	66		2.4		ng/L		07/20/17 10:13	07/23/17 16:16	
Perfluorooctanoic acid (PFOA)	1300	ME	2.4		ng/L			07/23/17 16:16	
Perfluorononanoic acid (PFNA)	2.3		2.4		ng/L			07/23/17 16:16	
Perfluorodecanoic acid (PFDA)	1.1		2.4		ng/L			07/23/17 16:16	
Perfluoroundecanoic acid (PFUnA)	2.0		2.4		ng/L		07/20/17 10:13	07/23/17 16:16	
Perfluorododecanoic acid (PFDoA)	2.0		2.4		ng/L			07/23/17 16:16	
Perfluorotridecanoic Acid (PFTriA)	2.0		2.4		ng/L			07/23/17 16:16	
Perfluorobutanesulfonic acid	52		2.4		ng/L			07/23/17 16:16	
(PFBS) Perfluorohexanesulfonic acid	350		2.4	0.85	ng/L		07/20/17 10:13	07/23/17 16:16	
(PFHxS) Perfluoroheptanesulfonic Acid (PFHpS)	9.0		2.4	0.70	ng/L		07/20/17 10:13	07/23/17 16:16	
Perfluorooctanesulfonic acid (PFOS)	370	E	3.9	1.2	ng/L		07/20/17 10:13	07/23/17 16:16	
Perfluorodecanesulfonic acid (PFDS)	2.9	U	3.9	1.2	ng/L		07/20/17 10:13	07/23/17 16:16	
Perfluorooctane Sulfonamide (FOSA)	1.1	J	39		ng/L		07/20/17 10:13	07/23/17 16:16	
lsotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fa
13C8 FOSA	14		25 - 150					07/23/17 16:16	
13C4 PFBA	77	·	25 - 150				07/20/17 10:13	07/23/17 16:16	
13C2 PFHxA	71		25 - 150				07/20/17 10:13	07/23/17 16:16	
13C4 PFOA	67		25 - 150				07/20/17 10:13	07/23/17 16:16	
13C5 PFNA	66		25 - 150				07/20/17 10:13	07/23/17 16:16	
13C2 PFDA	65		25 - 150				07/20/17 10:13	07/23/17 16:16	
13C2 PFUnA	48		25 - 150				07/20/17 10:13	07/23/17 16:16	
13C2 PFDoA	45		25 - 150				07/20/17 10:13	07/23/17 16:16	
1802 PFHxS	87		25 - 150				07/20/17 10:13	07/23/17 16:16	
13C4 PFOS	83		25 - 150				07/20/17 10:13	07/23/17 16:16	
13C4-PFHpA	93		25 - 150				07/20/17 10:13	07/23/17 16:16	
13C5 PFPeA	80		25 - 150				07/20/17 10:13	07/23/17 16:16	
Method: 537 (Modified) - Perfl Analyte		lydrocarbo Qualifier	ons - DL LOQ	DI.	Unit	D	Prepared	Analyzed	Dil Fa
Perfluorobutanoic acid (PFBA)	80		24		ng/L		•	07/24/17 20:07	1
Perfluoropentanoic acid (PFPeA)	190		24		ng/L			07/24/17 20:07	1
Perfluoropentanoic acid (PFHxA)			24		ng/L			07/24/17 20:07	1
	350 70		24		ng/L			07/24/17 20:07	
Perfluoroheptanoic acid (PFHpA)			24		-			07/24/17 20:07	1
Perfluorooctanoic acid (PFOA)	1500				ng/L				
Perfluorononanoic acid (PFNA)	20		24		ng/L			07/24/17 20:07	1
Perfluorodecanoic acid (PFDA)		JD	24		ng/L			07/24/17 20:07	1
Perfluoroundecanoic acid (PFUnA)	20		24		ng/L			07/24/17 20:07	1
Perfluorododecanoic acid (PFDoA)	20		24		ng/L			07/24/17 20:07	1
Perfluorotridecanoic Acid (PFTriA)		J D	24		ng/L			07/24/17 20:07	1
Perfluorobutanesulfonic acid (PFBS)	55	D	24	9.0	ng/L		07/20/17 10:13	07/24/17 20:07	1

Client: Tetra Tech, Inc.

TestAmerica Job ID: 320-29732-1

Project/Site: TT: PFAS, Brunswick, Discharge

Client Sample ID: TP-PFC-019-TPI Lab Sample ID: 320-29732-1

Date Collected: 07/06/17 09:11 Matrix: Water Date Received: 07/07/17 10:00

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanesulfonic acid (PFHxS)	360	D	24	8.5	ng/L		07/20/17 10:13	07/24/17 20:07	10
Perfluoroheptanesulfonic Acid (PFHpS)	12	JD	24	7.0	ng/L		07/20/17 10:13	07/24/17 20:07	10
Perfluorooctanesulfonic acid (PFOS)	360	D	39	12	ng/L		07/20/17 10:13	07/24/17 20:07	10
Perfluorodecanesulfonic acid (PFDS)	29	U	39	12	ng/L		07/20/17 10:13	07/24/17 20:07	10
Perfluorooctane Sulfonamide (FOSA)	18	JD	390	6.2	ng/L		07/20/17 10:13	07/24/17 20:07	10
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fa
13C8 FOSA	15	Q	25 - 150				07/20/17 10:13	07/24/17 20:07	10
13C4 PFBA	98		25 - 150				07/20/17 10:13	07/24/17 20:07	10
13C2 PFHxA	94		25 - 150				07/20/17 10:13	07/24/17 20:07	10
13C4 PFOA	88		25 - 150				07/20/17 10:13	07/24/17 20:07	10
13C5 PFNA	77		25 - 150				07/20/17 10:13	07/24/17 20:07	10
13C2 PFDA	62		25 - 150				07/20/17 10:13	07/24/17 20:07	10
13C2 PFUnA	54		25 - 150				07/20/17 10:13	07/24/17 20:07	10
13C2 PFDoA	47		25 - 150				07/20/17 10:13	07/24/17 20:07	10
1802 PFHxS	96		25 - 150				07/20/17 10:13	07/24/17 20:07	10
13C4 PFOS	82		25 - 150				07/20/17 10:13	07/24/17 20:07	10
13C4-PFHpA	105		25 - 150				07/20/17 10:13	07/24/17 20:07	10
13C5 PFPeA	95		25 - 150				07/20/17 10:13	07/24/17 20:07	10
Method: 537 (Modified) - Perfl		•							
Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorotetradecanoic acid	1.6	J M Q	2.4	0.39	ng/L		07/20/17 09:15	07/25/17 15:05	1
(PFTeA)									
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C2 PFDoA	67		25 - 150				07/20/17 09:15	07/25/17 15:05	1

Client Sample ID: TP-PFC-019-MID-CARBON Lab Sample ID: 320-29732-2

Date Collected: 07/06/17 09:16 Matrix: Water Date Received: 07/07/17 10:00

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	100		2.5	0.46	ng/L		07/20/17 10:13	07/24/17 20:14	1
Perfluoropentanoic acid (PFPeA)	16		2.5	0.99	ng/L		07/20/17 10:13	07/24/17 20:14	1
Perfluorohexanoic acid (PFHxA)	1.2	J	2.5	0.78	ng/L		07/20/17 10:13	07/24/17 20:14	1
Perfluoroheptanoic acid (PFHpA)	2.0	UM	2.5	0.80	ng/L		07/20/17 10:13	07/24/17 20:14	1
Perfluorooctanoic acid (PFOA)	2.0	U M	2.5	0.75	ng/L		07/20/17 10:13	07/24/17 20:14	1
Perfluorononanoic acid (PFNA)	2.0	U	2.5	0.65	ng/L		07/20/17 10:13	07/24/17 20:14	1
Perfluorodecanoic acid (PFDA)	1.0	U	2.5	0.44	ng/L		07/20/17 10:13	07/24/17 20:14	1
Perfluoroundecanoic acid (PFUnA)	2.0	U	2.5	0.75	ng/L		07/20/17 10:13	07/24/17 20:14	1
Perfluorododecanoic acid (PFDoA)	2.0	U	2.5	0.58	ng/L		07/20/17 10:13	07/24/17 20:14	1
Perfluorotridecanoic Acid (PFTriA)	2.0	U	2.5	0.55	ng/L		07/20/17 10:13	07/24/17 20:14	1
Perfluorobutanesulfonic acid (PFBS)	2.0	U	2.5	0.92	ng/L		07/20/17 10:13	07/24/17 20:14	1
Perfluorohexanesulfonic acid (PFHxS)	2.0	U	2.5	0.87	ng/L		07/20/17 10:13	07/24/17 20:14	1
Perfluoroheptanesulfonic Acid (PFHpS)	2.0	U	2.5	0.71	ng/L		07/20/17 10:13	07/24/17 20:14	1
Perfluorooctanesulfonic acid (PFOS)	3.0	U	4.0	1.3	ng/L		07/20/17 10:13	07/24/17 20:14	1

TestAmerica Sacramento

Client: Tetra Tech, Inc. TestAmerica Job ID: 320-29732-1

Project/Site: TT: PFAS, Brunswick, Discharge

Client Sample ID: TP-PFC-019-MID-CARBON

Lab Sample ID: 320-29732-2 Date Collected: 07/06/17 09:16 **Matrix: Water**

Date Received: 07/07/17 10:00

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorodecanesulfonic acid (PFDS)	3.0	U	4.0	1.2	ng/L		07/20/17 10:13	07/24/17 20:14	1
Perfluorooctane Sulfonamide (FOSA)	2.5	J	40	0.64	ng/L		07/20/17 10:13	07/24/17 20:14	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C8 FOSA	6	Q	25 - 150				07/20/17 10:13	07/24/17 20:14	1
13C4 PFBA	101		25 - 150				07/20/17 10:13	07/24/17 20:14	1
13C2 PFHxA	100		25 - 150				07/20/17 10:13	07/24/17 20:14	1
13C4 PFOA	102		25 - 150				07/20/17 10:13	07/24/17 20:14	1
13C5 PFNA	81		25 - 150				07/20/17 10:13	07/24/17 20:14	1
13C2 PFDA	72		25 - 150				07/20/17 10:13	07/24/17 20:14	1
13C2 PFUnA	63		25 - 150				07/20/17 10:13	07/24/17 20:14	1
13C2 PFDoA	58		25 - 150				07/20/17 10:13	07/24/17 20:14	1
1802 PFHxS	102		25 - 150				07/20/17 10:13	07/24/17 20:14	1
13C4 PFOS	99		25 - 150				07/20/17 10:13	07/24/17 20:14	1
13C4-PFHpA	116		25 - 150				07/20/17 10:13	07/24/17 20:14	1
13C5 PFPeA	102		25 - 150				07/20/17 10:13	07/24/17 20:14	1
Method: 537 (Modified) - Perfl	uorinated H	lydrocarbo	ons - RE						
Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorotetradecanoic acid (PFTeA)	1.4	J M Q	2.5	0.40	ng/L		07/20/17 09:15	07/25/17 15:12	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C2 PFDoA	92		25 - 150				07/20/17 09:15	07/25/17 15:12	1

Client Sample ID: TP-PFC-019-TPE

Lab Sample ID: 320-29732-3 Date Collected: 07/06/17 09:21 **Matrix: Water**

Date Received: 07/07/17 10:00

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	85		2.4	0.44	ng/L		07/20/17 10:13	07/23/17 16:30	1
Perfluoropentanoic acid (PFPeA)	24		2.4	0.95	ng/L		07/20/17 10:13	07/23/17 16:30	1
Perfluorohexanoic acid (PFHxA)	6.1		2.4	0.76	ng/L		07/20/17 10:13	07/23/17 16:30	1
Perfluoroheptanoic acid (PFHpA)	1.9	U	2.4	0.77	ng/L		07/20/17 10:13	07/23/17 16:30	1
Perfluorooctanoic acid (PFOA)	0.76	J M	2.4	0.72	ng/L		07/20/17 10:13	07/23/17 16:30	1
Perfluorononanoic acid (PFNA)	1.9	U	2.4	0.63	ng/L		07/20/17 10:13	07/23/17 16:30	1
Perfluorodecanoic acid (PFDA)	0.96	U	2.4	0.42	ng/L		07/20/17 10:13	07/23/17 16:30	1
Perfluoroundecanoic acid (PFUnA)	1.9	U	2.4	0.72	ng/L		07/20/17 10:13	07/23/17 16:30	1
Perfluorododecanoic acid (PFDoA)	1.9	U	2.4	0.56	ng/L		07/20/17 10:13	07/23/17 16:30	1
Perfluorotridecanoic Acid (PFTriA)	1.9	U	2.4	0.53	ng/L		07/20/17 10:13	07/23/17 16:30	1
Perfluorobutanesulfonic acid (PFBS)	1.9	U	2.4	0.88	ng/L		07/20/17 10:13	07/23/17 16:30	1
Perfluorohexanesulfonic acid (PFHxS)	1.9	U	2.4	0.84	ng/L		07/20/17 10:13	07/23/17 16:30	1
Perfluoroheptanesulfonic Acid (PFHpS)	1.9	U	2.4	0.69	ng/L		07/20/17 10:13	07/23/17 16:30	1
Perfluorooctanesulfonic acid (PFOS)	2.9	U	3.9	1.2	ng/L		07/20/17 10:13	07/23/17 16:30	1
Perfluorodecanesulfonic acid (PFDS)	2.9	U	3.9	1.2	ng/L		07/20/17 10:13	07/23/17 16:30	1
Perfluorooctane Sulfonamide (FOSA)	2.1	J	39	0.61	ng/L		07/20/17 10:13	07/23/17 16:30	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C8 FOSA	2	Q	25 - 150				07/20/17 10:13	07/23/17 16:30	1

Client: Tetra Tech, Inc.

TestAmerica Job ID: 320-29732-1

Project/Site: TT: PFAS, Brunswick, Discharge

Client Sample ID: TP-PFC-019-TPE Lab Sample ID: 320-29732-3

Date Collected: 07/06/17 09:21

Date Received: 07/07/17 10:00

Matrix: Water

Isotope Dilution	%Recovery Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C4 PFBA	102	25 - 150	07/20/17 10:13	07/23/17 16:30	1
13C2 PFHxA	101	25 - 150	07/20/17 10:13	07/23/17 16:30	1
13C4 PFOA	102	25 - 150	07/20/17 10:13	07/23/17 16:30	1
13C5 PFNA	85	25 - 150	07/20/17 10:13	07/23/17 16:30	1
13C2 PFDA	93	25 - 150	07/20/17 10:13	07/23/17 16:30	1
13C2 PFUnA	78	25 - 150	07/20/17 10:13	07/23/17 16:30	1
13C2 PFDoA	69	25 - 150	07/20/17 10:13	07/23/17 16:30	1
1802 PFHxS	105	25 - 150	07/20/17 10:13	07/23/17 16:30	1
13C4 PFOS	102	25 - 150	07/20/17 10:13	07/23/17 16:30	1
13C4-PFHpA	118	25 - 150	07/20/17 10:13	07/23/17 16:30	1
13C5 PFPeA	98	25 - 150	07/20/17 10:13	07/23/17 16:30	1

Method: 537 (Modified) - Perfit	Jorinated H	lydrocarbo	ns - RE						
Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorotetradecanoic acid (PFTeA)	1.5	J M Q	2.5	0.39	ng/L		07/20/17 09:15	07/25/17 15:19	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C2 PFDoA	87		25 - 150				07/20/17 09:15	07/25/17 15:19	1

Client Sample ID: TP-PFC-019-TPE-D Lab Sample ID: 320-29732-4

Date Collected: 07/06/17 00:00 Matrix: Water

Date Received: 07/07/17 10:00

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	82		2.4	0.44	ng/L		07/18/17 07:22	07/21/17 21:06	1
Perfluoropentanoic acid (PFPeA)	24		2.4	0.96	ng/L		07/18/17 07:22	07/21/17 21:06	1
Perfluorohexanoic acid (PFHxA)	6.4		2.4	0.76	ng/L		07/18/17 07:22	07/21/17 21:06	1
Perfluoroheptanoic acid (PFHpA)	1.9	U	2.4	0.78	ng/L		07/18/17 07:22	07/21/17 21:06	1
Perfluorooctanoic acid (PFOA)	1.9	UM	2.4	0.72	ng/L		07/18/17 07:22	07/21/17 21:06	1
Perfluorononanoic acid (PFNA)	1.9	U	2.4	0.63	ng/L		07/18/17 07:22	07/21/17 21:06	1
Perfluorodecanoic acid (PFDA)	0.97	U	2.4	0.43	ng/L		07/18/17 07:22	07/21/17 21:06	1
Perfluoroundecanoic acid (PFUnA)	1.9	U	2.4	0.72	ng/L		07/18/17 07:22	07/21/17 21:06	1
Perfluorododecanoic acid (PFDoA)	1.9	U	2.4	0.57	ng/L		07/18/17 07:22	07/21/17 21:06	1
Perfluorotridecanoic Acid (PFTriA)	1.9	U	2.4	0.53	ng/L		07/18/17 07:22	07/21/17 21:06	1
Perfluorotetradecanoic acid (PFTeA)	0.97	U	2.4	0.39	ng/L		07/18/17 07:22	07/21/17 21:06	1
Perfluorobutanesulfonic acid (PFBS)	1.9	U	2.4	0.89	ng/L		07/18/17 07:22	07/21/17 21:06	1
Perfluorohexanesulfonic acid (PFHxS)	1.9	U	2.4	0.84	ng/L		07/18/17 07:22	07/21/17 21:06	1
Perfluoroheptanesulfonic Acid (PFHpS)	1.9	U	2.4	0.69	ng/L		07/18/17 07:22	07/21/17 21:06	1
Perfluorooctanesulfonic acid (PFOS)	2.9	U	3.9	1.2	ng/L		07/18/17 07:22	07/21/17 21:06	1
Perfluorodecanesulfonic acid (PFDS)	2.9	U	3.9	1.2	ng/L		07/18/17 07:22	07/21/17 21:06	1
Perfluorooctane Sulfonamide (FOSA)	1.9	U	39	0.62	ng/L		07/18/17 07:22	07/21/17 21:06	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C8 FOSA	0.3	Q	25 - 150				07/18/17 07:22	07/21/17 21:06	1
13C4 PFBA	96		25 - 150				07/18/17 07:22	07/21/17 21:06	1
13C2 PFHxA	98		25 - 150				07/18/17 07:22	07/21/17 21:06	1
13C4 PFOA	111		25 - 150				07/18/17 07:22	07/21/17 21:06	1
13C5 PFNA	91		25 - 150				07/18/17 07:22	07/21/17 21:06	1
13C2 PFDA	85		25 - 150				07/18/17 07:22	07/21/17 21:06	1

TestAmerica Sacramento

Client: Tetra Tech, Inc.

TestAmerica Job ID: 320-29732-1

Project/Site: TT: PFAS, Brunswick, Discharge

Client Sample ID: TP-PFC-019-TPE-D Lab Sample ID: 320-29732-4

Date Collected: 07/06/17 00:00 Matrix: Water

Date Received: 07/07/17 10:00

Perfluorooctane Sulfonamide (FOSA)

Isotope Dilution

13C8 FOSA

Isotope Dilution	%Recovery Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFUnA	67	25 - 150	07/18/17 07:22	07/21/17 21:06	1
13C2 PFDoA	70	25 - 150	07/18/17 07:22	07/21/17 21:06	1
1802 PFHxS	106	25 - 150	07/18/17 07:22	07/21/17 21:06	1
13C4 PFOS	100	25 - 150	07/18/17 07:22	07/21/17 21:06	1
13C4-PFHpA	118	25 - 150	07/18/17 07:22	07/21/17 21:06	1
13C5 PFPeA	98	25 - 150	07/18/17 07:22	07/21/17 21:06	1

41

Limits

25 - 150

0.65 ng/L

07/25/17 09:58 07/27/17 22:18

07/25/17 09:58 07/27/17 22:18

Analyzed

Prepared

2.0 U H

2 Q

%Recovery Qualifier

Default Detection Limits

Client: Tetra Tech, Inc.

TestAmerica Job ID: 320-29732-1

Project/Site: TT: PFAS, Brunswick, Discharge

Method: 537 (Modified) - Perfluorinated Hydrocarbons

Prep: 3535

Analyte	LOQ	DL	Units	Method
Perfluorobutanesulfonic acid (PFBS)	2.5	0.92	ng/L	537 (Modified)
Perfluorobutanoic acid (PFBA)	2.5	0.46	ng/L	537 (Modified)
Perfluorodecanesulfonic acid (PFDS)	4.0	1.2	ng/L	537 (Modified)
Perfluorodecanoic acid (PFDA)	2.5	0.44	ng/L	537 (Modified)
Perfluorododecanoic acid (PFDoA)	2.5	0.58	ng/L	537 (Modified)
Perfluoroheptanesulfonic Acid (PFHpS)	2.5	0.71	ng/L	537 (Modified)
Perfluoroheptanoic acid (PFHpA)	2.5	0.80	ng/L	537 (Modified)
Perfluorohexanesulfonic acid (PFHxS)	2.5	0.87	ng/L	537 (Modified)
Perfluorohexanoic acid (PFHxA)	2.5	0.79	ng/L	537 (Modified)
Perfluorononanoic acid (PFNA)	2.5	0.65	ng/L	537 (Modified)
Perfluorooctane Sulfonamide (FOSA)	40	0.64	ng/L	537 (Modified)
Perfluorooctanesulfonic acid (PFOS)	4.0	1.3	ng/L	537 (Modified)
Perfluorooctanoic acid (PFOA)	2.5	0.75	ng/L	537 (Modified)
Perfluoropentanoic acid (PFPeA)	2.5	0.99	ng/L	537 (Modified)
Perfluorotetradecanoic acid (PFTeA)	2.5	0.40	ng/L	537 (Modified)
Perfluorotridecanoic Acid (PFTriA)	2.5	0.55	ng/L	537 (Modified)
Perfluoroundecanoic acid (PFUnA)	2.5	0.75	ng/L	537 (Modified)

Isotope Dilution Summary

Client: Tetra Tech, Inc. TestAmerica Job ID: 320-29732-1

Project/Site: TT: PFAS, Brunswick, Discharge

Method: 537 (Modified) - Perfluorinated Hydrocarbons

Matrix: Water Prep Type: Total/NA

			Perc	ent Isotope	Dilution Re	covery (Ac	ceptance L	imits)	
		3C8 FOS	3C4 PFB/	3C2 PFHx	3C4 PFO	3C5 PFN/	3C2 PFD/	3C2 PFUn	3C2 PFDo
Lab Sample ID	Client Sample ID	(25-150)	(25-150)	(25-150)	(25-150)	(25-150)	(25-150)	(25-150)	(25-150)
320-29732-1	TP-PFC-019-TPI	14 Q	77	71	67	66	65	48	45
320-29732-1 - DL	TP-PFC-019-TPI	15 Q	98	94	88	77	62	54	47
320-29732-1 - RE	TP-PFC-019-TPI								67
320-29732-2	TP-PFC-019-MID-CARBON	6 Q	101	100	102	81	72	63	58
320-29732-2 - RE	TP-PFC-019-MID-CARBON								92
320-29732-3	TP-PFC-019-TPE	2 Q	102	101	102	85	93	78	69
320-29732-3 - RE	TP-PFC-019-TPE								87
320-29732-4	TP-PFC-019-TPE-D	0.3 Q	96	98	111	91	85	67	70
320-29732-4 - RE	TP-PFC-019-TPE-D	2 Q							
LCS 320-174599/2-A	Lab Control Sample	17 Q	100	102	119	109	126	110	97
LCS 320-175074/2-A	Lab Control Sample								105
LCS 320-175097/2-A	Lab Control Sample	7 Q	101	100	113	98	120	104	86
LCS 320-175742/2-A	Lab Control Sample	62							
LCSD 320-174599/3-A	Lab Control Sample Dup	20 Q	97	105	125	111	128	117	101
LCSD 320-175074/3-A	Lab Control Sample Dup								106
LCSD 320-175097/3-A	Lab Control Sample Dup	25	111	105	116	105	128	104	94
LCSD 320-175742/3-A	Lab Control Sample Dup	55							
MB 320-174599/1-A	Method Blank	47	113	115	136	123	138	137	114
MB 320-175074/1-A	Method Blank								116
MB 320-175097/1-A	Method Blank	51	103	100	110	102	118	98	84
MB 320-175742/1-A	Method Blank	63							
			Perc	ent Isotope	Dilution Re	coverv (Ac	ceptance L	imits)	
		3O2 PFHx		3C4-PFHp		, , ,		,	
Lab Sample ID	Client Sample ID	(25-150)	(25-150)	(25-150)	(25-150)				
320-29732-1	TP-PFC-019-TPI	87	83	93	80				
320-29732-1 - DL	TP-PFC-019-TPI	96	82	105	95				
320-29732-1 - RE	TP-PFC-019-TPI								
320-29732-2	TP-PFC-019-MID-CARBON	102	99	116	102				
320-29732-2 - RE	TP-PFC-019-MID-CARBON								
320-29732-3	TP-PFC-019-TPE	105	102	118	98				
320-29732-3 - RE	TP-PFC-019-TPE								
320-29732-4	TP-PFC-019-TPE-D	106	100	118	98				
320-29732-4 - RE	TP-PFC-019-TPE-D								
LCS 320-174599/2-A	Lab Control Sample	97	93	135	101				
LCS 320-175074/2-A	Lab Control Sample								
LCS 320-175097/2-A	Lab Control Sample	101	94	119	102				
LCS 320-175742/2-A	Lab Control Sample								
LCSD 320-174599/3-A	Lab Control Sample Dup	97	96	132	101				
LCSD 320-175074/3-A	Lab Control Sample Dup								
LCSD 320-175097/3-A	Lab Control Sample Dup	108	95	124	104				
LCSD 320-175742/3-A	Lab Control Sample Dup								
MB 320-174599/1-A	Method Blank	111	105	148	112				
MB 320-175074/1-A	Method Blank								
MB 320-175097/1-A	Method Blank	96	93	114	105				
MB 320-175742/1-A	Method Blank		30						
Surrogate Legend									
13C8 FOSA = 13C8 FO	DSA	·							

13C4 PFBA = 13C4 PFBA

Isotope Dilution Summary

Client: Tetra Tech, Inc.

TestAmerica Job ID: 320-29732-1

Project/Site: TT: PFAS, Brunswick, Discharge

13C2 PFHxA = 13C2 PFHxA

13C4 PFOA = 13C4 PFOA

13C5 PFNA = 13C5 PFNA

13C2 PFDA = 13C2 PFDA

13C2 PFUnA = 13C2 PFUnA

13C2 PFDoA = 13C2 PFDoA

18O2 PFHxS = 18O2 PFHxS

13C4 PFOS = 13C4 PFOS

13C4-PFHpA = 13C4-PFHpA

13C5 PFPeA = 13C5 PFPeA

TestAmerica Job ID: 320-29732-1 Client: Tetra Tech, Inc.

Project/Site: TT: PFAS, Brunswick, Discharge

Method: 537 (Modified) - Perfluorinated Hydrocarbons

Lab Sample ID: MB 320-174599/1-A

Matrix: Water

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 174599

Matrix: Water								Prep Type: To	
Analysis Batch: 175462								Prep Batch:	174599
		MB							
Analyte		Qualifier	LOQ		Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	1.0	U M	2.5	0.46	ng/L		07/18/17 07:22	07/21/17 20:45	1
Perfluoropentanoic acid (PFPeA)	2.0	U	2.5	0.99	ng/L		07/18/17 07:22	07/21/17 20:45	1
Perfluorohexanoic acid (PFHxA)	2.0	U	2.5	0.79	ng/L		07/18/17 07:22	07/21/17 20:45	1
Perfluoroheptanoic acid (PFHpA)	2.0	U	2.5	0.80	ng/L		07/18/17 07:22	07/21/17 20:45	1
Perfluorooctanoic acid (PFOA)	2.0	U	2.5	0.75	ng/L		07/18/17 07:22	07/21/17 20:45	1
Perfluorononanoic acid (PFNA)	2.0	U	2.5	0.65	ng/L		07/18/17 07:22	07/21/17 20:45	1
Perfluorodecanoic acid (PFDA)	1.0	U	2.5	0.44	ng/L		07/18/17 07:22	07/21/17 20:45	1
Perfluoroundecanoic acid (PFUnA)	2.0	U	2.5	0.75	ng/L		07/18/17 07:22	07/21/17 20:45	1
Perfluorododecanoic acid (PFDoA)	2.0	U	2.5	0.58	ng/L		07/18/17 07:22	07/21/17 20:45	1
Perfluorotridecanoic Acid (PFTriA)	0.631	J	2.5	0.55	ng/L		07/18/17 07:22	07/21/17 20:45	1
Perfluorotetradecanoic acid (PFTeA)	0.711	J M	2.5	0.40	ng/L		07/18/17 07:22	07/21/17 20:45	1
Perfluorobutanesulfonic acid (PFBS)	2.0	U	2.5	0.92	ng/L		07/18/17 07:22	07/21/17 20:45	1
Perfluorohexanesulfonic acid (PFHxS)	2.0	U	2.5	0.87	ng/L		07/18/17 07:22	07/21/17 20:45	1
Perfluoroheptanesulfonic Acid (PFHpS)	2.0	U	2.5	0.71	ng/L		07/18/17 07:22	07/21/17 20:45	1
Perfluorooctanesulfonic acid (PFOS)	3.0	U	4.0	1.3	ng/L		07/18/17 07:22	07/21/17 20:45	1
Perfluorodecanesulfonic acid (PFDS)	3.0	U	4.0	1.2	ng/L		07/18/17 07:22	07/21/17 20:45	1
Perfluorooctane Sulfonamide (FOSA)	2.0	U	40	0.64	ng/L		07/18/17 07:22	07/21/17 20:45	1
	MB	MB							
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C8 FOSA	47		25 - 150				07/18/17 07:22	07/21/17 20:45	1
13C4 PFBA	113		25 - 150				07/18/17 07:22	07/21/17 20:45	1
13C2 PFHxA	115		25 - 150				07/18/17 07:22	07/21/17 20:45	1
13C4 PFOA	136		25 - 150				07/18/17 07:22	07/21/17 20:45	1
13C5 PFNA	123		25 - 150				07/18/17 07:22	07/21/17 20:45	1
13C2 PFDA	138		25 - 150				07/18/17 07:22	07/21/17 20:45	1
13C2 PFUnA	137		25 - 150				07/18/17 07:22	07/21/17 20:45	1

Lab Sample ID: LCS 320-174599/2-A

114

111

105

148

112

Matrix: Water

13C2 PFDoA

1802 PFHxS

13C4 PFOS

13C4-PFHpA

13C5 PFPeA

(PFDoA)

Analysis Batch: 175462

Client Sample ID: Lab Control Sample Prep Type: Total/NA **Prep Batch: 174599**

07/18/17 07:22 07/21/17 20:45

07/18/17 07:22 07/21/17 20:45

07/18/17 07:22 07/21/17 20:45

07/18/17 07:22 07/21/17 20:45

07/18/17 07:22 07/21/17 20:45

1

1

LCS LCS Spike %Rec. **Analyte** Added Result Qualifier Unit %Rec Limits Perfluorobutanoic acid (PFBA) 40.0 44.8 ng/L 112 60 - 140 Perfluoropentanoic acid (PFPeA) 40.0 42.2 106 60 - 140 ng/L Perfluorohexanoic acid (PFHxA) 40.0 42.7 ng/L 107 60 - 140 Perfluoroheptanoic acid (PFHpA) 40.0 40.6 ng/L 102 60 - 140 Perfluorooctanoic acid (PFOA) 40.0 42.1 105 60 - 140 ng/L Perfluorononanoic acid (PFNA) 40.0 42.6 106 ng/L 60 - 140 Perfluorodecanoic acid (PFDA) 40.0 43.8 110 60 - 140 ng/L Perfluoroundecanoic acid 40.0 43.8 ng/L 109 60 - 140 (PFUnA) 40.0 43.5 109 ng/L 60 - 140Perfluorododecanoic acid

25 - 150

25 - 150

25 - 150

25 - 150

25 - 150

TestAmerica Sacramento

Client: Tetra Tech, Inc.

TestAmerica Job ID: 320-29732-1

Project/Site: TT: PFAS, Brunswick, Discharge

Method: 537 (Modified) - Perfluorinated Hydrocarbons (Continued)

Lab Sample ID: LCS 320-174599/2-A

Matrix: Water

Analysis Batch: 175462

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 174599

Analysis Batch. 173402	Spike	LCS	LCS				%Rec.
Analyte	Added	Result	Qualifier	Unit	D	%Rec	Limits
Perfluorotridecanoic Acid (PFTriA)	40.0	43.4		ng/L		109	50 - 150
Perfluorotetradecanoic acid (PFTeA)	40.0	48.6		ng/L		122	50 - 150
Perfluorobutanesulfonic acid (PFBS)	35.4	38.5		ng/L		109	50 - 150
Perfluorohexanesulfonic acid (PFHxS)	36.4	38.9		ng/L		107	60 - 140
Perfluoroheptanesulfonic Acid (PFHpS)	38.1	44.7		ng/L		117	50 - 150
Perfluorooctanesulfonic acid (PFOS)	37.1	40.0		ng/L		108	60 - 140
Perfluorodecanesulfonic acid (PFDS)	38.6	39.6		ng/L		103	50 - 150
Perfluorooctane Sulfonamide (FOSA)	40.0	42.9		ng/L		107	60 - 140

LCS LCS

Isotope Dilution	%Recovery	Qualifier	Limits
13C8 FOSA	17	Q	25 - 150
13C4 PFBA	100		25 - 150
13C2 PFHxA	102		25 - 150
13C4 PFOA	119		25 - 150
13C5 PFNA	109		25 - 150
13C2 PFDA	126		25 - 150
13C2 PFUnA	110		25 - 150
13C2 PFDoA	97		25 - 150
1802 PFHxS	97		25 - 150
13C4 PFOS	93		25 - 150
13C4-PFHpA	135		25 - 150
13C5 PFPeA	101		25 - 150

Lab Sample ID: LCSD 320-174599/3-A

Matrix: Water

Analysis Batch: 175462

Client Sample ID: Lab Control Sample Dup Prep Type: Total/NA

Prep Batch: 174599

	Spike	LCSD	LCSD				%Rec.		RPD
Analyte	Added	Result	Qualifier	Unit	D	%Rec	Limits	RPD	Limit
Perfluorobutanoic acid (PFBA)	40.0	47.2		ng/L		118	60 - 140	5	30
Perfluoropentanoic acid (PFPeA)	40.0	43.9		ng/L		110	60 - 140	4	30
Perfluorohexanoic acid (PFHxA)	40.0	42.9		ng/L		107	60 - 140	0	30
Perfluoroheptanoic acid (PFHpA)	40.0	43.3		ng/L		108	60 - 140	6	30
Perfluorooctanoic acid (PFOA)	40.0	42.9		ng/L		107	60 - 140	2	30
Perfluorononanoic acid (PFNA)	40.0	42.8		ng/L		107	60 - 140	1	30
Perfluorodecanoic acid (PFDA)	40.0	42.5		ng/L		106	60 - 140	3	30
Perfluoroundecanoic acid (PFUnA)	40.0	40.6		ng/L		101	60 - 140	8	30
Perfluorododecanoic acid (PFDoA)	40.0	43.8		ng/L		109	60 - 140	1	30
Perfluorotridecanoic Acid (PFTriA)	40.0	46.6		ng/L		117	50 - 150	7	30
Perfluorotetradecanoic acid (PFTeA)	40.0	49.4		ng/L		123	50 - 150	2	30

Client: Tetra Tech, Inc.

TestAmerica Job ID: 320-29732-1

Project/Site: TT: PFAS, Brunswick, Discharge

13C2 PFDoA

Method: 537 (Modified) - Perfluorinated Hydrocarbons (Continued)

Lab Sample ID: LCSD 320-1	74599/3-A	ı						C	lient S	ample		Control Sa		
Matrix: Water												Prep Type:		
Analysis Batch: 175462												Prep Batc	h: 17	4599
				Spike		LCSD	LCS	D				%Rec.		RPI
Analyte				Added		Result	Qua	lifier	Unit	D	%Rec	Limits I	RPD	Limi
Perfluorobutanesulfonic acid				35.4		37.4			ng/L		106	50 - 150	3	3
(PFBS)														
Perfluorohexanesulfonic acid				36.4		38.5			ng/L		106	60 - 140	1	3
(PFHxS)				00.4		44.0					400	50 450	_	•
Perfluoroheptanesulfonic Acid				38.1		41.6			ng/L		109	50 - 150	7	3
(PFHpS) Perfluorooctanesulfonic acid				37.1		39.2			ng/L		106	60 - 140	2	3
(PFOS)				37.1		00.2			ng/L		100	00 - 140	_	0
Perfluorodecanesulfonic acid				38.6		38.4			ng/L		100	50 ₋ 150	3	3
(PFDS)									3					
Perfluorooctane Sulfonamide				40.0		43.3			ng/L		108	60 - 140	1	30
(FOSA)														
	LCSD		_											
Isotope Dilution	%Recovery	Qual	ifier	Limits										
13C8 FOSA	20	Q		25 - 150	_									
13C4 PFBA	97			25 - 150										
13C2 PFHxA	105			25 - 150										
13C4 PFOA	125			25 - 150										
13C5 PFNA	111			25 - 150										
13C2 PFDA	128			25 - 150										
13C2 PFUnA	117			25 - 150										
13C2 PFDoA	101			25 - 150										
1802 PFHxS	97			25 - 150										
13C4 PFOS	96			25 - 150										
13C4-PFHpA	132			25 - 150										
13C5 PFPeA	101			25 - 150										
Lab Sample ID: MB 320-175	074/1-A									Clie	ent Samp	ole ID: Meth	od I	3lanl
Matrix: Water												Prep Type:	Tot	al/N <i>F</i>
Analysis Batch: 175951												Prep Batc	h: 17	75074
-		MB	MB									-		
Analyte	Re	sult	Qualifier		LOQ		DL	Unit		D P	repared	Analyzed		Dil Fa
Perfluorotetradecanoic acid (PFTeA)	0	.807 MB			2.5		0.40	ng/L		07/2	0/17 09:15	07/25/17 14:	17	
Isotope Dilution	%Reco		Qualifier	Lin	nits					P	repared	Analyzed		Dil Fa
13C2 PFDoA		116		25.	. 150					07/2	0/17 09:15	07/25/17 14:		
Lab Sample ID: LCS 320-17	507 <i>4/2</i> -Δ								Clic	nt Sar	nnle ID:	Lab Contro	ni Sa	mnl
Matrix: Water	esimble.								O.IIC	Oui		Prep Type:		
Analysis Batch: 175951												Prep Batc		
Analysis Datoll. 170001				Spike		LCS	LCS	i				%Rec.		557
Analyte				Added		Result			Unit	D	%Rec	Limits		
Perfluorotetradecanoic acid		-		40.0		58.6			ng/L	=	146	50 - 150		
(PFTeA)						30.0			··-g·-					
	LCS	LCS												
Isotope Dilution	%Recovery	Qual	ifier	Limits										

25 - 150

105

Client: Tetra Tech, Inc. TestAmerica Job ID: 320-29732-1

Project/Site: TT: PFAS, Brunswick, Discharge

Method: 537 (Modified) - Perfluorinated Hydrocarbons (Continued)

Lab Sample ID: LCSD 320-175074/3-A

Matrix: Water

Analysis Batch: 175951

Perfluorotetradecanoic acid

Client Sample ID: Lab Control Sample Dup

Prep Type: Total/NA

Prep Batch: 175074

%Rec. **RPD**

Limits RPD Limit

Added Result Qualifier Unit %Rec 40.0 64.6 Q ng/L 162 50 - 150 10 30

LCSD LCSD

(PFTeA)

Analyte

LCSD LCSD

MB MB

Isotope Dilution %Recovery Qualifier 13C2 PFDoA 106

Limits 25 - 150

Spike

Lab Sample ID: MB 320-175097/1-A Client Sample ID: Method Blank

Matrix: Water

Analysis Batch: 175528

Prep Type: Total/NA Prep Batch: 175097

Result Qualifier LOQ DL Unit Prepared Dil Fac Analyte Analyzed 1.0 U 2.5 Perfluorobutanoic acid (PFBA) 0.46 ng/L 07/20/17 10:13 07/23/17 14:39 Perfluoropentanoic acid (PFPeA) 2.0 U 2.5 0.99 ng/L 07/20/17 10:13 07/23/17 14:39 1 Perfluorohexanoic acid (PFHxA) 2.0 U 2.5 0.79 ng/L 07/20/17 10:13 07/23/17 14:39 2.0 U Perfluoroheptanoic acid (PFHpA) 2.5 0.80 ng/L 07/20/17 10:13 07/23/17 14:39 1 Perfluorooctanoic acid (PFOA) 2.0 U 2.5 0.75 ng/L 07/20/17 10:13 07/23/17 14:39 1 2.0 U 2.5 07/20/17 10:13 07/23/17 14:39 Perfluorononanoic acid (PFNA) 0.65 ng/L 1 Perfluorodecanoic acid (PFDA) 1.0 U 2.5 0.44 ng/L 07/20/17 10:13 07/23/17 14:39 1 Perfluoroundecanoic acid (PFUnA) 2.5 07/20/17 10:13 07/23/17 14:39 20 U 0.75 ng/L 1 Perfluorododecanoic acid (PFDoA) 2.0 U 0.58 ng/L 2.5 07/20/17 10:13 07/23/17 14:39 1 2.5 2.0 U 07/20/17 10:13 07/23/17 14:39 Perfluorotridecanoic Acid (PFTriA) 0.55 ng/L Perfluorobutanesulfonic acid (PFBS) 2.0 U 2.5 0.92 ng/L 07/20/17 10:13 07/23/17 14:39 1 Perfluorohexanesulfonic acid (PFHxS) 2.0 U 2.5 0.87 ng/L 07/20/17 10:13 07/23/17 14:39 2.0 U 2.5 07/20/17 10:13 07/23/17 14:39 0.71 ng/L 1 Perfluoroheptanesulfonic Acid (PFHpS) 3.0 U 4.0 07/20/17 10:13 07/23/17 14:39 Perfluorooctanesulfonic acid (PFOS) 1.3 ng/L 1 Perfluorodecanesulfonic acid (PFDS) 3.0 U 4.0 1.2 ng/L 07/20/17 10:13 07/23/17 14:39 Perfluorooctane Sulfonamide (FOSA) 20 11 40 0.64 ng/l 07/20/17 10:13 07/23/17 14:39 1

remuoroociane Sunonamue (FOSA)	2.0	U	40	0.04 TIG/L	07/20/17 10.13	07/23/17 14.39	
	MB	MB					
Isotope Dilution	%Recovery	Qualifier	Limits		Prepared	Analyzed	Dil Fac
13C8 FOSA	51		25 - 150		07/20/17 10:13	07/23/17 14:39	1
13C4 PFBA	103		25 - 150		07/20/17 10:13	07/23/17 14:39	1
13C2 PFHxA	100		25 - 150		07/20/17 10:13	07/23/17 14:39	1
13C4 PFOA	110		25 - 150		07/20/17 10:13	07/23/17 14:39	1
13C5 PFNA	102		25 - 150		07/20/17 10:13	07/23/17 14:39	1
13C2 PFDA	118		25 - 150		07/20/17 10:13	07/23/17 14:39	1
13C2 PFUnA	98		25 - 150		07/20/17 10:13	07/23/17 14:39	1
13C2 PFDoA	84		25 - 150		07/20/17 10:13	07/23/17 14:39	1
18O2 PFHxS	96		25 - 150		07/20/17 10:13	07/23/17 14:39	1
13C4 PFOS	93		25 - 150		07/20/17 10:13	07/23/17 14:39	1
13C4-PFHpA	114		25 - 150		07/20/17 10:13	07/23/17 14:39	1
13C5 PFPeA	105		25 - 150		07/20/17 10:13	07/23/17 14:39	1

Lab Sample ID: LCS 320-175097/2-A

Matrix: Water

Analysis Batch: 175528

Client Sample ID: Lab Control Sample Prep Type: Total/NA **Prep Batch: 175097**

	Spike	LCS	LCS				%Rec.	
Analyte	Added	Result	Qualifier	Unit	D	%Rec	Limits	
Perfluorobutanoic acid (PFBA)	40.0	43.9		ng/L		110	60 - 140	

Client: Tetra Tech, Inc.

TestAmerica Job ID: 320-29732-1

Project/Site: TT: PFAS, Brunswick, Discharge

Lab Sample ID: LCS 320-175097/2-A

Method: 537 (Modified) - Perfluorinated Hydrocarbons (Continued)

Matrix: Water Prep Type: Total/NA **Analysis Batch: 175528 Prep Batch: 175097** LCS LCS Spike %Rec. Analyte Added Result Qualifier Unit D %Rec Limits 40.0 60 - 140 Perfluoropentanoic acid (PFPeA) 40.4 ng/L 101 Perfluorohexanoic acid (PFHxA) 40.0 41.9 ng/L 105 60 - 140 Perfluoroheptanoic acid (PFHpA) 40.0 60 - 140 42.1 ng/L 105 Perfluorooctanoic acid (PFOA) 40.0 39.8 100 60 - 140 ng/L Perfluorononanoic acid (PFNA) 40.0 42.2 ng/L 105 60 - 140 40.0 42.6 107 60 - 140 Perfluorodecanoic acid (PFDA) ng/L 40.0 41.4 104 60 - 140 ng/L Perfluoroundecanoic acid (PFUnA) 40.0 46.3 ng/L 116 60 - 140 Perfluorododecanoic acid (PFDoA) 40.0 54.0 ng/L 135 50 - 150 Perfluorotridecanoic Acid (PFTriA)

35.4

36.4

38.1

37.1

38.6

40.0

39.2

35.8

44.5

38.2

42.5

43.1

ng/L

ng/L

ng/L

ng/L

ng/L

ng/L

(PFDS)
Perfluorooctane Sulfonamide
(FOSA)

Perfluorobutanesulfonic acid

Perfluorohexanesulfonic acid

Perfluoroheptanesulfonic Acid

Perfluorooctanesulfonic acid

Perfluorodecanesulfonic acid

(PFBS)

(PFHxS)

(PFHpS)

(PFOS)

LCS LCS

Isotope Dilution	%Recovery	Qualifier	Limits
13C8 FOSA	7	Q	25 - 150
13C4 PFBA	101		25 - 150
13C2 PFHxA	100		25 - 150
13C4 PFOA	113		25 - 150
13C5 PFNA	98		25 - 150
13C2 PFDA	120		25 - 150
13C2 PFUnA	104		25 - 150
13C2 PFDoA	86		25 - 150
1802 PFHxS	101		25 - 150
13C4 PFOS	94		25 - 150
13C4-PFHpA	119		25 - 150
13C5 PFPeA	102		25 - 150

Lab Sample ID: LCSD 320-175097/3-A

Matrix: Water

Analysis Batch: 175528

Client Sample ID: Lab Control Sample Dup

Client Sample ID: Lab Control Sample

111

98

117

103

110

108

50 - 150

60 - 140

50 - 150

60 - 140

50 - 150

60 - 140

Prep Type: Total/NA Prep Batch: 175097

-	Spike	LCSD	LCSD				%Rec.		RPD
Analyte	Added	Result	Qualifier	Unit	D	%Rec	Limits	RPD	Limit
Perfluorobutanoic acid (PFBA)	40.0	45.8		ng/L		114	60 - 140	4	30
Perfluoropentanoic acid (PFPeA)	40.0	43.1		ng/L		108	60 - 140	6	30
Perfluorohexanoic acid (PFHxA)	40.0	43.2		ng/L		108	60 - 140	3	30
Perfluoroheptanoic acid (PFHpA)	40.0	42.3		ng/L		106	60 - 140	0	30
Perfluorooctanoic acid (PFOA)	40.0	41.6		ng/L		104	60 - 140	4	30
Perfluorononanoic acid (PFNA)	40.0	40.9		ng/L		102	60 - 140	3	30
Perfluorodecanoic acid (PFDA)	40.0	39.8		ng/L		100	60 - 140	7	30

TestAmerica Sacramento

Client: Tetra Tech, Inc.

TestAmerica Job ID: 320-29732-1

Project/Site: TT: PFAS, Brunswick, Discharge

Method: 537 (Modified) - Perfluorinated Hydrocarbons (Continued)

Lab Sample ID: LCSD 320-175 Matrix: Water Analysis Batch: 175528	5097/3-A						С	lient Sa	ample		Control Sa Prep Type Prep Bate	: Tot	al/NA
Analysis Batch. 175520			Spike		LCSD	LCSD					%Rec.	,11. 11	RPI
Analyte			Added		Result			Unit	D	%Rec		RPD	Limi
Perfluoroundecanoic acid			40.0		42.6			ng/L		107	60 - 140	3	30
(PFUnA)													
Perfluorododecanoic acid (PFDoA)			40.0		45.0			ng/L		113	60 - 140	3	3
Perfluorotridecanoic Acid (PFTriA)			40.0		48.6			ng/L		122	50 - 150	10	30
Perfluorobutanesulfonic acid			35.4		39.5			ng/L		112	50 - 150	1	3
(PFBS) Perfluorohexanesulfonic acid			36.4		35.3			ng/L		97	60 - 140	1	3
(PFHxS)			38.1		45.3			na/l		119	50 ₋ 150	2	3
Perfluoroheptanesulfonic Acid [PFHpS]								ng/L					
Perfluorooctanesulfonic acid (PFOS)			37.1		41.3			ng/L		111	60 - 140	8	3
Perfluorodecanesulfonic acid (PFDS)			38.6		43.3			ng/L		112	50 - 150	2	3
Perfluorooctane Sulfonamide			40.0		44.6			ng/L		112	60 - 140	3	3
(FOSA)	LCSD L	CCD											
sotope Dilution %	Recovery Q		Limits										
13C8 FOSA	25 G		25 - 150										
13C4 PFBA	111		25 - 150										
13C2 PFHxA	105		25 - 150										
13C4 PFOA	116		25 - 150										
13C5 PFNA	105		25 - 150										
13C2 PFDA	128		25 - 150										
13C2 PFUnA	104		25 - 150										
13C2 PFDoA	94		25 - 150										
1802 PFHxS	108		25 - 150										
13C4 PFOS	95		25 - 150										
13C4-PFHpA	124		25 - 150										
13C5 PFPeA	104		25 - 150										
Lab Sample ID: MB 320-17574	2/1-A								Clie		ole ID: Met		
Matrix: Water											Prep Type		
Analysis Batch: 176487											Prep Bato	:h: 17	75742
A 14		B MB				D	114				A l		D!! F-
Analyte		U Qualifier		LOQ		DL U				repared	Analyzed		Dil Fa
Perfluorooctane Sulfonamide (FOSA)		.0 U B MB		40		0.64 n	ıg/L		07/2	5/17 09:12	07/27/17 20	:55	
lsotope Dilution	%Recove	ry Qualifier	Lim	its						repared	Analyzed		Dil Fa
13C8 FOSA	6	53	25 -	150					07/2	5/17 09:12	07/27/17 20	:55	
Lab Sample ID: LCS 320-1757	42/2-A							Clie	nt Sar		Lab Contr		
Matrix: Water											Prep Type		
Analysis Batch: 176487			Spike		LCS	LCS					Prep Bato %Rec.	:h: 17	75742
Analyte			Added		Result	Qualif	fier	Unit	D	%Rec	Limits		
			40.0		44.4			ng/L		111 -	60 - 140		

Client: Tetra Tech, Inc.

TestAmerica Job ID: 320-29732-1

Project/Site: TT: PFAS, Brunswick, Discharge

LCS LCS

 Isotope Dilution
 %Recovery
 Qualifier
 Limits

 13C8 FOSA
 62
 25 - 150

Lab Sample ID: LCSD 320-175742/3-A

Matrix: Water

Analysis Batch: 176487

Client Sample ID: Lab Control Sample Dup

Prep Type: Total/NA

Prep Batch: 175742

%Rec. Spike LCSD LCSD **RPD** Analyte Added Result Qualifier Unit D %Rec Limits RPD Limit Perfluorooctane Sulfonamide 40.0 45.0 ng/L 112 60 - 140

(FOSA)

LCSD LCSD

QC Association Summary

Client: Tetra Tech, Inc.

Project/Site: TT: PFAS, Brunswick, Discharge

LCMS

Pre	рΒ	atch	ո։ 1՝	7459	9
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Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-29732-4	TP-PFC-019-TPE-D	Total/NA	Water	3535	
MB 320-174599/1-A	Method Blank	Total/NA	Water	3535	
LCS 320-174599/2-A	Lab Control Sample	Total/NA	Water	3535	
LCSD 320-174599/3-A	Lab Control Sample Dup	Total/NA	Water	3535	

Prep Batch: 175074

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-29732-1 - RE	TP-PFC-019-TPI	Total/NA	Water	3535	
320-29732-2 - RE	TP-PFC-019-MID-CARBON	Total/NA	Water	3535	
320-29732-3 - RE	TP-PFC-019-TPE	Total/NA	Water	3535	
MB 320-175074/1-A	Method Blank	Total/NA	Water	3535	
LCS 320-175074/2-A	Lab Control Sample	Total/NA	Water	3535	
LCSD 320-175074/3-A	Lab Control Sample Dup	Total/NA	Water	3535	

Prep Batch: 175097

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-29732-1	TP-PFC-019-TPI	Total/NA	Water	3535	
320-29732-1 - DL	TP-PFC-019-TPI	Total/NA	Water	3535	
320-29732-2	TP-PFC-019-MID-CARBON	Total/NA	Water	3535	
320-29732-3	TP-PFC-019-TPE	Total/NA	Water	3535	
MB 320-175097/1-A	Method Blank	Total/NA	Water	3535	
LCS 320-175097/2-A	Lab Control Sample	Total/NA	Water	3535	
LCSD 320-175097/3-A	Lab Control Sample Dup	Total/NA	Water	3535	

Analysis Batch: 175462

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-29732-4	TP-PFC-019-TPE-D	Total/NA	Water	537 (Modified)	174599
MB 320-174599/1-A	Method Blank	Total/NA	Water	537 (Modified)	174599
LCS 320-174599/2-A	Lab Control Sample	Total/NA	Water	537 (Modified)	174599
LCSD 320-174599/3-A	Lab Control Sample Dup	Total/NA	Water	537 (Modified)	174599

Analysis Batch: 175528

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-29732-1	TP-PFC-019-TPI	Total/NA	Water	537 (Modified)	175097
320-29732-3	TP-PFC-019-TPE	Total/NA	Water	537 (Modified)	175097
MB 320-175097/1-A	Method Blank	Total/NA	Water	537 (Modified)	175097
LCS 320-175097/2-A	Lab Control Sample	Total/NA	Water	537 (Modified)	175097
LCSD 320-175097/3-A	Lab Control Sample Dup	Total/NA	Water	537 (Modified)	175097

Prep Batch: 175742

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-29732-4 - RE	TP-PFC-019-TPE-D	Total/NA	Water	3535	
MB 320-175742/1-A	Method Blank	Total/NA	Water	3535	
LCS 320-175742/2-A	Lab Control Sample	Total/NA	Water	3535	
LCSD 320-175742/3-A	Lab Control Sample Dup	Total/NA	Water	3535	

Analysis Batch: 175757

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-29732-1 - DL	TP-PFC-019-TPI	Total/NA	Water	537 (Modified)	175097
320-29732-2	TP-PFC-019-MID-CARBON	Total/NA	Water	537 (Modified)	175097

TestAmerica Job ID: 320-29732-1

QC Association Summary

Client: Tetra Tech, Inc.

TestAmerica Job ID: 320-29732-1

Project/Site: TT: PFAS, Brunswick, Discharge

LCMS (Continued)

Analysis Batch: 175951

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-29732-1 - RE	TP-PFC-019-TPI	Total/NA	Water	537 (Modified)	175074
320-29732-2 - RE	TP-PFC-019-MID-CARBON	Total/NA	Water	537 (Modified)	175074
320-29732-3 - RE	TP-PFC-019-TPE	Total/NA	Water	537 (Modified)	175074
MB 320-175074/1-A	Method Blank	Total/NA	Water	537 (Modified)	175074
LCS 320-175074/2-A	Lab Control Sample	Total/NA	Water	537 (Modified)	175074
LCSD 320-175074/3-A	Lab Control Sample Dup	Total/NA	Water	537 (Modified)	175074

Analysis Batch: 176487

Lab Sample	ID Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-29732-4	- RE TP-PFC-019-TPE-D	Total/NA	Water	537 (Modified)	175742
MB 320-1757	42/1-A Method Blank	Total/NA	Water	537 (Modified)	175742
LCS 320-175	742/2-A Lab Control Sample	Total/NA	Water	537 (Modified)	175742
LCSD 320-17	5742/3-A Lab Control Sample Dup	Total/NA	Water	537 (Modified)	175742

Lab Chronicle

Client: Tetra Tech, Inc.

Project/Site: TT: PFAS, Brunswick, Discharge

Lab Sample ID: 320-29732-1

TestAmerica Job ID: 320-29732-1

Client Sample ID: TP-PFC-019-TPI

Date Collected: 07/06/17 09:11 **Matrix: Water**

Date Received: 07/07/17 10:00

	Batch	Batch		Dilution	Batch	Prepared		
Prep Type	Type	Method	Run	Factor	Number	or Analyzed	Analyst	Lab
Total/NA	Prep	3535			175097	07/20/17 10:13	CCB	TAL SAC
Total/NA	Analysis	537 (Modified)		1	175528	07/23/17 16:16	SBC	TAL SAC
Total/NA	Prep	3535	DL		175097	07/20/17 10:13	CCB	TAL SAC
Total/NA	Analysis	537 (Modified)	DL	10	175757	07/24/17 20:07	SBC	TAL SAC
Total/NA	Prep	3535	RE		175074	07/20/17 09:15	J1S	TAL SAC
Total/NA	Analysis	537 (Modified)	RE	1	175951	07/25/17 15:05	SBC	TAL SAC

Client Sample ID: TP-PFC-019-MID-CARBON Lab Sample ID: 320-29732-2

Date Collected: 07/06/17 09:16 **Matrix: Water**

Date Received: 07/07/17 10:00

	Batch	Batch		Dilution	Batch	Prepared		
Prep Type	Туре	Method	Run	Factor	Number	or Analyzed	Analyst	Lab
Total/NA	Prep	3535			175097	07/20/17 10:13	CCB	TAL SAC
Total/NA	Analysis	537 (Modified)		1	175757	07/24/17 20:14	SBC	TAL SAC
Total/NA	Prep	3535	RE		175074	07/20/17 09:15	J1S	TAL SAC
Total/NA	Analysis	537 (Modified)	RE	1	175951	07/25/17 15:12	SBC	TAL SAC

Lab Sample ID: 320-29732-3 Client Sample ID: TP-PFC-019-TPE

Date Collected: 07/06/17 09:21 **Matrix: Water**

Date Received: 07/07/17 10:00

	Batch	Batch		Dilution	Batch	Prepared		
Prep Type	Type	Method	Run	Factor	Number	or Analyzed	Analyst	Lab
Total/NA	Prep	3535			175097	07/20/17 10:13	ССВ	TAL SAC
Total/NA	Analysis	537 (Modified)		1	175528	07/23/17 16:30	SBC	TAL SAC
Total/NA	Prep	3535	RE		175074	07/20/17 09:15	J1S	TAL SAC
Total/NA	Analysis	537 (Modified)	RE	1	175951	07/25/17 15:19	SBC	TAL SAC

Lab Sample ID: 320-29732-4 Client Sample ID: TP-PFC-019-TPE-D

Date Collected: 07/06/17 00:00

Date Received: 07/07/17 10:00

	Batch	Batch		Dilution	Batch	Prepared		
Prep Type	Type	Method	Run	Factor	Number	or Analyzed	Analyst	Lab
Total/NA	Prep	3535			174599	07/18/17 07:22	ССВ	TAL SAC
Total/NA	Analysis	537 (Modified)		1	175462	07/21/17 21:06	SBC	TAL SAC
Total/NA	Prep	3535	RE		175742	07/25/17 09:58	J1S	TAL SAC
Total/NA	Analysis	537 (Modified)	RE	1	176487	07/27/17 22:18	JRB	TAL SAC

Laboratory References:

TAL SAC = TestAmerica Sacramento, 880 Riverside Parkway, West Sacramento, CA 95605, TEL (916)373-5600

Matrix: Water

Accreditation/Certification Summary

Client: Tetra Tech, Inc.

TestAmerica Job ID: 320-29732-1

Project/Site: TT: PFAS, Brunswick, Discharge

Laboratory: TestAmerica Sacramento

Unless otherwise noted, all analytes for this laboratory were covered under each accreditation/certification below.

uthority	Program		EPA Region	Identification Number	Expiration Date	
regon	NELAP		10	4040	01-28-18	
The following analytes	s are included in this repo	rt, but accreditation	certification is not off	ered by the governing autho	ority:	
Analysis Method	Prep Method	Matrix	Analyt	е		
537 (Modified)	3535	Water	Perflu	orobutanesulfonic acid (PFE	BS)	
537 (Modified)	3535	Water	Perflu	orobutanoic acid (PFBA)		
537 (Modified)	3535	Water	Perflu	orodecanesulfonic acid (PFI	DS)	
537 (Modified)	3535	Water	Perflu	orodecanoic acid (PFDA)		
537 (Modified)	3535	Water	Perfluorododecanoic acid (PFDoA)			
537 (Modified)	3535	Water	Perflu	oroheptanesulfonic Acid (PF	HpS)	
537 (Modified)	3535	Water	Perfluoroheptanoic acid (PFHpA)			
537 (Modified)	3535	Water	Perflu	orohexanesulfonic acid (PFI	HxS)	
537 (Modified)	3535	Water	Perflu	orohexanoic acid (PFHxA)		
537 (Modified)	3535	Water	Perflu	orononanoic acid (PFNA)		
537 (Modified)	3535	Water	Perflu	orooctane Sulfonamide (FO	SA)	
537 (Modified)	3535	Water	Perflu	orooctanesulfonic acid (PFC	OS)	
537 (Modified)	3535	Water	Perflu	orooctanoic acid (PFOA)		
537 (Modified)	3535	Water	Perflu	oropentanoic acid (PFPeA)		
537 (Modified)	3535	Water	Perflu	orotetradecanoic acid (PFTe	eA)	
537 (Modified)	3535	Water	Perflu	orotridecanoic Acid (PFTriA)	
537 (Modified)	3535	Water	Perflu	oroundecanoic acid (PFUnA	۸)	

Method Summary

Client: Tetra Tech, Inc.

Project/Site: TT: PFAS, Brunswick, Discharge

TestAmerica Job ID: 320-29732-1

Method	Method Description	Protocol	Laboratory
537 (Modified)	Perfluorinated Hydrocarbons	EPA	TAL SAC

Protocol References:

EPA = US Environmental Protection Agency

Laboratory References:

TAL SAC = TestAmerica Sacramento, 880 Riverside Parkway, West Sacramento, CA 95605, TEL (916)373-5600

Sample Summary

Client: Tetra Tech, Inc.

Project/Site: TT: PFAS, Brunswick, Discharge

Lab Sample ID Client Sample ID Matrix Collected Received 320-29732-1 07/06/17 09:11 07/07/17 10:00 TP-PFC-019-TPI Water 320-29732-2 TP-PFC-019-MID-CARBON Water 07/06/17 09:16 07/07/17 10:00 320-29732-3 TP-PFC-019-TPE Water 07/06/17 09:21 07/07/17 10:00 Water 07/06/17 00:00 07/07/17 10:00 320-29732-4 TP-PFC-019-TPE-D

TestAmerica Job ID: 320-29732-1

Lab Name: TestAmerica Sacramento Job No.: 320-29732-1

SDG No.:

Instrument ID: A8 N Analysis Batch Number: 175252

Lab Sample ID: IC 320-175252/3 Client Sample ID:

Date Analyzed: 07/20/17 17:15 Lab File ID: 2017.07.20ICAL 003.d GC Column: GeminiC18 3x1 ID: 3(mm)

COMPOUND NAME	RETENTION	MANUAL INTEGRATION		
	TIME	REASON	ANALYST	DATE
Perfluorooctanesulfonic acid (PFOS)	3.09	Assign Peak	phomsopha t	07/20/17 18:19
Perfluorotetradecanoic acid (PFTeA)	4.58	Assign Peak	phomsopha t	07/20/17 18:19

Lab Name: TestAmerica Sacramento Job No.: 320-29732-1

SDG No.:

Instrument ID: A8 N Analysis Batch Number: 175462

Lab Sample ID: MB 320-174599/1-A Client Sample ID:

Date Analyzed: 07/21/17 20:45 Lab File ID: 2017.07.21C 016.d GC Column: GeminiC18 3x1 ID: 3(mm)

COMPOUND NAME	RETENTION	MANUAL INTEGRATION		
	TIME	REASON	ANALYST	DATE
Perfluorobutanoic acid (PFBA)	1.53	Baseline	chandrase	07/24/17 16:04
			nas	
Perfluorotetradecanoic acid	4.51	Baseline	chandrase	07/24/17 16:04
(PFTeA)			nas	

Lab Sample ID: 320-29732-4 Client Sample ID: TP-PFC-019-TPE-D

COMPOUND NAME	RETENTION	MANUAL INTEGRATION		
	TIME	REASON	ANALYST	DATE
Perfluorooctanoic acid (PFOA)	2.66	Isomers	chandrase	07/24/17 16:05
			nas	

Lab Name: TestAmerica Sacramento Job No.: 320-29732-1

SDG No.:

Instrument ID: A8 N Analysis Batch Number: 175476

Lab Sample ID: IC 320-175476/3 Client Sample ID:

Date Analyzed: 07/23/17 13:10 Lab File ID: 2017.07.23ICAL 003.d GC Column: GeminiC18 3x1 ID: 3(mm)

COMPOUND NAME	RETENTION	MANUAL INTEGRATION		
	TIME	REASON	ANALYST	DATE
Perfluorohexanesulfonic acid (PFHxS)	2.45	Assign Peak	phomsopha t	07/23/17 14:56

Lab Sample ID: IC 320-175476/5 Client Sample ID:

Date Analyzed: 07/23/17 13:23 Lab File ID: 2017.07.23ICAL 005.d GC Column: GeminiC18 3x1 ID: 3(mm)

COMPOUND NAME	RETENTION	MANUAL INTEGRATION		
	TIME	REASON	ANALYST	DATE
Perfluorohexanesulfonic acid (PFHxS)	2.44	Assign Peak	phomsopha t	07/23/17 15:01

Lab Sample ID: IC 320-175476/6 Client Sample ID:

Date Analyzed: 07/23/17 13:30 Lab File ID: 2017.07.23ICAL 006.d GC Column: GeminiC18 3x1 ID: 3(mm)

COMPOUND NAME	RETENTION	MANUAL INTEGRATION		
	TIME	REASON	ANALYST	DATE
Perfluorohexanesulfonic acid (PFHxS)	2.43	Assign Peak	phomsopha t	07/23/17 15:02

Lab Sample ID: IC 320-175476/8 Client Sample ID:

Date Analyzed: 07/23/17 13:44 Lab File ID: 2017.07.23ICAL 008.d GC Column: GeminiC18 3x1 ID: 3(mm)

COMPOUND NAME	RETENTION	MANUAL INTEGRATION		
	TIME	REASON	ANALYST	DATE
Perfluorohexanesulfonic acid	2.43	Assign Peak	phomsopha	07/23/17 15:04
(PFHxS)			t	

Lab Name: TestAmerica Sacramento Job No.: 320-29732-1

SDG No.:

Instrument ID: A8 N Analysis Batch Number: 175528

Lab Sample ID: 320-29732-1 Client Sample ID: TP-PFC-019-TPI

Date Analyzed: 07/23/17 16:16 Lab File ID: 2017.07.23A 016.d GC Column: GeminiC18 3x1 ID: 3(mm)

COMPOUND NAME	RETENTION	MANUAL INTEGRATION		
	TIME	REASON	ANALYST	DATE
Perfluorobutanoic acid (PFBA)	1.56	Baseline	chandrase	07/24/17 12:59
			nas	
Perfluorooctanoic acid (PFOA)	2.76	Isomers	chandrase	07/24/17 12:59
			nas	

Lab Sample ID: 320-29732-3 Client Sample ID: TP-PFC-019-TPE

Date Analyzed: 07/23/17 16:30 Lab File ID: 2017.07.23A_018.d GC Column: GeminiC18 3x1 ID: 3(mm)

COMPOUND NAME	RETENTION	MANUAL INTEGRATION		
	TIME	REASON	ANALYST	DATE
Perfluorooctanoic acid (PFOA)	2.76	Isomers	chandrase	07/24/17 13:01
			nas	

Lab Name: TestAmerica Sacramento Job No.: 320-29732-1

SDG No.:

Instrument ID: A8 N Analysis Batch Number: 175631

Lab Sample ID: CCVL 320-175631/2 Client Sample ID:

Date Analyzed: 07/24/17 11:42 Lab File ID: 2017.07.24A_004.d GC Column: GeminiC18 3x1 ID: 3(mm)

COMPOUND NAME	RETENTION	MANUAL INTEGRATION		
	TIME	REASON	ANALYST	DATE
Perfluorotetradecanoic acid (PFTeA)	4.66	Baseline	chandrase nas	07/24/17 13:21

Lab Name: TestAmerica Sacramento Job No.: 320-29732-1

SDG No.:

Instrument ID: A8 N Analysis Batch Number: 175757

Lab Sample ID: 320-29732-1 DL

Client Sample ID: TP-PFC-019-TPI DL

Date Analyzed: 07/24/17 20:07 Lab File ID: 2017.07.24AA 029.d

GC Column: GeminiC18 3x1 ID: 3 (mm)

COMPOUND NAME	RETENTION	MANUAL INTEGRATION		
	TIME	REASON	ANALYST	DATE
Perfluorooctanoic acid (PFOA)	2.74	Isomers	chandrase	07/25/17 11:27
			nas	

Lab Sample ID: 320-29732-2 Client Sample ID: TP-PFC-019-MID-CARBON

Date Analyzed: 07/24/17 20:14 Lab File ID: 2017.07.24AA 030.d GC Column: GeminiC18 3x1 ID: 3(mm)

COMPOUND NAME	RETENTION	MANUAL INTEGRATION		
	TIME	REASON	ANALYST	DATE
Perfluoroheptanoic acid (PFHpA)	2.37	Baseline	chandrase	07/25/17 11:29
			nas	
Perfluorooctanoic acid (PFOA)	2.74	Isomers	chandrase	07/25/17 11:28
			nas	

Lab Name: TestAmerica Sacramento Job No.: 320-29732-1

SDG No.:

Instrument ID: A8 N Analysis Batch Number: 175951

Lab Sample ID: MB 320-175074/1-A Client Sample ID:

Date Analyzed: 07/25/17 14:17 Lab File ID: 2017.07.25B 002.d GC Column: GeminiC18 3x1 ID: 3(mm)

COMPOUND NAME	RETENTION	MANUAL INTEGRATION		
	TIME	REASON	ANALYST	DATE
Perfluorotetradecanoic acid	4.62	Baseline	chandrase	07/26/17 11:05
(PFTeA)			nas	

Lab Sample ID: 320-29732-1 RE Client Sample ID: TP-FFC-019-TPI RE

Date Analyzed: 07/25/17 15:05 Lab File ID: 2017.07.25B 009.d GC Column: GeminiC18 3x1 ID: 3 (mm)

COMPOUND NAME	RETENTION	MANUAL INTEGRATION		
	TIME	REASON	ANALYST	DATE
Perfluorotetradecanoic acid	4.64	Baseline	chandrase	07/26/17 11:30
(PFTeA)			nas	

Lab Sample ID: 320-29732-2 RE Client Sample ID: TP-PFC-019-MID-CARBON RE

Date Analyzed: 07/25/17 15:12 Lab File ID: 2017.07.25B 010.d GC Column: GeminiC18 3x1 ID: 3(mm)

COMPOUND NAME	RETENTION	MANUAL INTEGRATION		
	TIME	REASON	ANALYST	DATE
Perfluorotetradecanoic acid (PFTeA)	4.63	Baseline	chandrase	07/26/17 11:28
(Friea)			nas	

Lab Sample ID: 320-29732-3 RE Client Sample ID: TP-PFC-019-TPE RE

COMPOUND NAME	RETENTION	MANUAL INTEGRATION		
	TIME	REASON	ANALYST	DATE
Perfluorotetradecanoic acid	4.64	Baseline	chandrase	07/26/17 11:29
(PFTeA)			nas	

LCMS MANUAL INTEGRATION SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-29732-1

SDG No.:

Instrument ID: A8 N Analysis Batch Number: 176352

Lab Sample ID: CCVL 320-176352/3 Client Sample ID:

COMPOUND NAME	RETENTION	MANUAL INTE	GRATION	
	TIME	REASON	ANALYST	DATE
Perfluorotetradecanoic acid (PFTeA)	4.72	Baseline	chandrase nas	07/27/17 14:51

Lab Name: TestAmerica	Sacramento	Job No.:	320-29732-1

Parent Reage	ent		
Reagent ID	Volume Added	Analyte	Concentration
		_	
LCPFC-IS_00002		13C2-PFOA	50 ng/mL
LCM2PFOA_00006		13C2-PFOA	0.25 ug/mL
(Purchased Rea	gent)	13C2-PFOA	50 ug/mL
LCd-NEtFOSA-M_00005	200 uL	d-N-EtFOSA-M	0.05 ug/mL
LCd-NMeFOSA-M_00004		d-N-MeFOSA-M	0.05 ug/mL
LCd3-NMeFOSAA_00004		d3-NMeFOSAA	0.05 ug/mL
LCd5-NEtFOSAA_00004		d5-NEtFOSAA	0.05 ug/mL
LCM2-6:FTS_00004	200 uL	M2-6:2FTS	0.0475 ug/mL
LCM2-8:2FTS_00004	200 uL	M2-8:2FTS	0.0479 ug/mL
LCM2PFHxDA 00010	200 uL	13C2-PFHxDA	0.05 ug/mL
LCM2PFTeDA 00009	200 uL	13C2-PFTeDA	0.05 ug/mL
LCM4PFHPA 00009	200 uL	13C4-PFHpA	0.05 ug/mL
LCM5PFPEA 00010	200 uL	13C5 PFPeA	0.05 ug/mL
LCM8FOSA 00013	200 uL	13C8 FOSA	0.05 ug/mL
LCMPFBA 00010		13C4 PFBA	0.05 ug/mL
LCMPFBS 00003	200 uL	13C3-PFBS	0.0465 ug/mL
LCMPFDA 00015	200 uL	13C2 PFDA	0.05 ug/mL
LCMPFDoA 00010	200 uL	13C2 PFDoA	0.05 ug/mL
LCMPFHxA 00016		13C2 PFHxA	0.05 ug/mL
LCMPFHxS 00010		1802 PFHxS	0.0473 ug/mL
LCMPFNA 00010		13C5 PFNA	0.05 ug/mL
LCMPFOA 00014		13C4 PFOA	0.05 ug/mL
LCMPFOS 00022		13C4 PFOS	0.0478 ug/mL
LCMPFUdA 00011		13C2 PFUnA	0.05 ug/mL
(Purchased Rea		d-N-EtFOSA-M	50 ug/mL
(Purchased Rea		d-N-MeFOSA-M	50 ug/mL
(Purchased Rea		d3-NMeFOSAA	50 ug/mL
(Purchased Rea	gent)	d5-NEtFOSAA	50 ug/mL
(Purchased Rea		M2-6:2FTS	47.5 ug/mL
(Purchased Rea	gent)	M2-8:2FTS	47.9 ug/mL
(Purchased Rea		13C2-PFHxDA	50 ug/mL
(Purchased Rea	gent)	13C2-PFTeDA	50 ug/mL
(Purchased Rea	gent)	13C4-PFHpA	50 ug/mL
(Purchased Rea		13C5 PFPeA	50 ug/mL
(Purchased Rea		13C8 FOSA	50 ug/mL
(Purchased Rea		13C4 PFBA	50 ug/mL
(Purchased Rea		13C3-PFBS	46.5 ug/mL
(Purchased Rea	gent)	13C2 PFDA	50 ug/mL
(Purchased Rea		13C2 PFDoA	50 ug/mL
(Purchased Rea	gent)	13C2 PFHxA	50 ug/mL
		1802 PFHxS	47.3 ug/mL
	,	13C5 PFNA	50 ug/mL
		13C4 PFOA	50 ug/mL
		13C4 PFOS	47.8 ug/mL
		13C2 PFUnA	50 ug/mL
LCd	(Purchased Rea (Purchased Rea (Purchased Rea (Purchased Rea	(Purchased Reagent) (Purchased Reagent) (Purchased Reagent) (Purchased Reagent) (Purchased Reagent) -NETFOSA-M_00005 200 uL	(Purchased Reagent) 13C5 PFNA (Purchased Reagent) 13C4 PFOA (Purchased Reagent) 13C4 PFOS (Purchased Reagent) 13C2 PFUNA

Lab	Name:	TestAmerica	Sacramento	Job No.: 320-29732-1

				Reagent	Parent Reagen	t		
Reagent ID	Exp Date	Prep Date	Dilutant Used	Final Volume	Reagent ID	Volume Added	Analyte	Concentration
					LCd-NMeFOSA-M 00004	200 uL	d-N-MeFOSA-M	0.05 ug/mI
					LCd3-NMeFOSAA 00004		d3-NMeFOSAA	0.05 ug/mI
					LCd5-NEtFOSAA_00004		d5-NEtFOSAA	0.05 ug/mI
					LCM2-6:FTS_00002		M2-6:2FTS	0.0475 ug/mI
					LCM2-8:2FTS_00002		M2-8:2FTS	0.0479 ug/mI
.LCd-NEtFOSA-M_00005	06/10/21		LLINGTON, Lot dNEtFOS		(Purchased Reage		d-N-EtFOSA-M	50 ug/mI
.LCd-NMeFOSA-M_00004	06/10/21		LLINGTON, Lot dNMeFOS		(Purchased Reage		d-N-MeFOSA-M	50 ug/mI
.LCd3-NMeFOSAA_00004	11/22/21		LLINGTON, Lot d3NMeFOS		(Purchased Reage		d3-NMeFOSAA	50 ug/mI
.LCd5-NEtFOSAA_00004	11/22/21		LLINGTON, Lot d5NEtFOS		(Purchased Reage	,	d5-NEtFOSAA	50 ug/mI
.LCM2-6:FTS_00002	01/08/21		ELLINGTON, Lot M262FT		(Purchased Reage		M2-6:2FTS	47.5 ug/mI
.LCM2-8:2FTS_00002	01/08/21	W	ELLINGTON, Lot M282FT	S0116	(Purchased Reage	ent)	M2-8:2FTS	47.9 ug/mI
LCMPFCSU_00081	12/26/17	06/26/17	Methanol, Lot Baker 141039	200 mL	LCM2PFHxDA_00010	200 uL	13C2-PFHxDA	0.05 ug/mL
					LCM2PFTeDA 00009		13C2-PFTeDA	0.05 ug/mI
					LCM4PFHPA 00009	200 uL	13C4-PFHpA	0.05 ug/mL
					LCM5PFPEA 00010	200 uL	13C5 PFPeA	0.05 ug/mL
					LCM8FOSA 00013	200 uL	13C8 FOSA	0.05 ug/mL
					LCMPFBA 00010	200 uL	13C4 PFBA	0.05 ug/mL
					LCMPFBS 00002	200 uL	13C3-PFBS	0.0465 ug/mL
					LCMPFDA 00015	200 uL	13C2 PFDA	0.05 ug/mL
					LCMPFDoA 00010	200 uL	13C2 PFDoA	0.05 ug/mL
					LCMPFHxA 00016	200 uL	13C2 PFHxA	0.05 ug/mL
					LCMPFHxS 00010	200 uL	1802 PFHxS	0.0473 ug/mL
					LCMPFNA 00010	200 uL	13C5 PFNA	0.05 ug/mL
					LCMPFOA 00014		13C4 PFOA	0.05 ug/mI
					LCMPFOS 00022	200 uL	13C4 PFOS	0.0478 ug/mI
					LCMPFUdA 00011		13C2 PFUnA	0.05 ug/mL
.LCM2PFHxDA 00010			on Laboratories, Lot 1		(Purchased Reage	ent)	13C2-PFHxDA	50 ug/mL
.LCM2PFTeDA 00009	12/07/20	Wellingt	on Laboratories, Lot I	M2PFTeDA0217	(Purchased Reage	ent)	13C2-PFTeDA	50 ug/mI
.LCM4PFHPA 00009	05/27/21	Welling	on Laboratories, Lot	M4PFHpA0516	(Purchased Reage	ent)	13C4-PFHpA	50 ug/mL
.LCM5PFPEA 00010	11/22/21	Welling	on Laboratories, Lot	M5PFPeA1116	(Purchased Reage		13C5 PFPeA	50 ug/mL
.LCM8FOSA 00013	12/22/20		on Laboratories, Lot		(Purchased Reage		13C8 FOSA	50 ug/mL
.LCMPFBA 00010	05/24/21	Welling	gton Laboratories, Lot	MPFBA0516	(Purchased Reage	ent)	13C4 PFBA	50 ug/mL
.LCMPFBS 00002	08/02/21	Welling	ton Laboratories, Lot	M3PFBS0815	(Purchased Reage	ent)	13C3-PFBS	46.5 ug/mL
.LCMPFDA 00015	09/30/21	Welling	gton Laboratories, Lot	MPFDA0916	(Purchased Reage	ent)	13C2 PFDA	50 ug/mL
.LCMPFDoA 00010	04/08/21	Welling	ton Laboratories, Lot	MPFDoA0416	(Purchased Reage		13C2 PFDoA	50 ug/mL
.LCMPFHxA 00016	11/22/21	Welling	ton Laboratories, Lot	MPFHxA1116	(Purchased Reage	ent)	13C2 PFHxA	50 ug/mL
.LCMPFHxS 00010	02/17/22		ton Laboratories, Lot		(Purchased Reage		1802 PFHxS	47.3 ug/mL
.LCMPFNA_00010	09/30/21		gton Laboratories, Lot		(Purchased Reage		13C5 PFNA	50 ug/mL
.LCMPFOA 00014	04/12/22		gton Laboratories, Lot		(Purchased Reage		13C4 PFOA	50 ug/mL
.LCMPFOS 00022	12/12/21		gton Laboratories, Lot		(Purchased Reage		13C4 PFOS	47.8 ug/mL
.LCMPFUdA_00011	11/22/21	Welling	ton Laboratories, Lot	MPFUdA1116	(Purchased Reage	ent)	13C2 PFUnA	50 ug/mL
LCPFC_FULL-L1_00005	12/27/17	07/07/17	MeOH/H2O, Lot 90285	5000 117	LCMPFC ALL SU 00001	2.50 11T ₁	d-N-EtFOSA-M	50 ng/mL
<u>-</u> <u>-</u>	,,						d-N-MeFOSA-M	50 ng/mL
							d3-NMeFOSAA	50 ng/mL
							d5-NEtFOSAA	50 ng/mL
							M2-6:2FTS	47.5 ng/mL

Lab Name: TestAmerica Sacramento	Job No.: 320-29732-1
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				Reagent	Parent Reage:	nt		
	Exp	Prep	Dilutant	Final		Volume		
Reagent ID	Date	Date	Used	Volume	Reagent ID	Added	Analyte	Concentratio
							M2-8:2FTS	47.9 ng/m
							13C2-PFHxDA	50 ng/m
							13C2-PFTeDA	50 ng/m
							13C4-PFHpA	50 ng/m
							13C5 PFPeA	50 ng/m
							13C8 FOSA	50 ng/m
							13C4 PFBA	50 ng/m
							13C2 PFDA	50 ng/m
							13C2 PFDoA	50 ng/m
							13C2 PFHxA	50 ng/m
							1802 PFHxS	47.3 ng/m
							13C5 PFNA	50 ng/m
							13C4 PFOA	50 ng/m
							13C4 PFOS	47.8 ng/m
							13C2 PFUnA	50 ng/m
					LCPFC ALL SP 00001	25 uL	Sodium	0.467 ng/m
							1H,1H,2H,2H-perfluorohexane	
							sulfonate (4:2)	
							Sodium	0.474 ng/r
							1H,1H,2H,2H-perfluorooctane	
							sulfonate (6:2)	
							Sodium	0.479 ng/m
							1H,1H,2H,2H-perfluorodecane sulfonate (8:2)	
							N-ethylperfluoro-1-octanesulfo namide	0.5 ng/m
							N-ethyl perfluorooctane	0.5 ng/m
							sulfonamidoacetic acid	3
							MeFOSA	0.5 ng/m
							N-methyl perfluorooctane sulfonamidoacetic acid	0.5 ng/m
							Perfluorobutanoic acid (PFBA)	0.5 ng/m
							Perfluorobutanesulfonic acid (PFBS)	0.442 ng/m
							Perfluorodecanoic acid (PFDA)	0.5 ng/m
							Perfluorododecanoic acid	0.5 ng/m
							(PFDoA)	2.2 5,
							Perfluorodecanesulfonic acid (PFDS)	0.482 ng/m
							Perfluoroheptanoic acid	0.5 ng/n
							(PFHpA) Perfluoroheptanesulfonic Acid	0.476 ng/m
							(PFHpS)	
							Perfluorohexanoic acid (PFHxA)	0.5 ng/m
							Perfluorohexadecanoic acid	0.5 ng/r
							Perfluorohexanesulfonic acid (PFHxS)	0.455 ng/m
							Perfluorononanoic acid (PFNA)	0.5 ng/m
							Perfluorooctanoic acid (PFOA)	0.5 ng/m

ab Name: TestAmerica Sacramento	Job No.: 320-29732-1
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				Reagent	Parent Reager	nt		
Reagent ID	Exp Date	Prep Date	Dilutant Used	Final Volume	Reagent ID	Volume Added	Analyte	Concentration
							Perfluorooctadecanoic acid	0.5 ng/mL
							Perfluorooctanesulfonic acid	0.464 ng/mL
							(PFOS)	
							Perfluorooctane Sulfonamide (FOSA)	0.5 ng/mL
							Perfluoropentanoic acid (PFPeA)	0.5 ng/mL
							Perfluorotetradecanoic acid (PFTeA)	0.5 ng/mL
							Perfluorotridecanoic Acid (PFTriA)	0.5 ng/mL
							Perfluoroundecanoic acid (PFUnA)	0.5 ng/mL
					LCPFCIS 00003	50 uL	13C2-PFOA	50 ng/mL
.LCMPFC_ALL_SU_00001	12/29/17	06/29/17	Methanol, Lot Baker 141039	10000 uL	LCd-NEtFOSA-M_00005		d-N-EtFOSA-M	1 ug/mL
					LCd-NMeFOSA-M 00004	200 uL	d-N-MeFOSA-M	1 ug/mL
					LCd3-NMeFOSAA 00004		d3-NMeFOSAA	1 ug/mL
					LCd5-NEtFOSAA 00004	200 uL	d5-NEtFOSAA	1 ug/mL
					LCM2-6:FTS 00004		M2-6:2FTS	0.95 ug/mL
					LCM2-8:2FTS 00004		M2-8:2FTS	0.958 ug/mL
					LCM2PFHxDA 00010		13C2-PFHxDA	1 ug/mL
					LCM2PFTeDA 00009		13C2-PFTeDA	1 ug/mL
					LCM4PFHPA 00009		13C4-PFHpA	1 ug/mL
					LCM5PFPEA 00010		13C5 PFPeA	1 ug/mL
					LCM8FOSA 00013	200 uL	13C8 FOSA	1 ug/mL
					LCMPFBA 00010		13C4 PFBA	1 ug/mL
					LCMPFDA 00015		13C2 PFDA	1 ug/mL
					LCMPFDoA 00010		13C2 PFDoA	1 ug/mL
					LCMPFHxA 00016		13C2 PFHxA	1 ug/mL
					LCMPFHxS 00010		1802 PFHxS	0.946 ug/mL
					LCMPFNA 00010		13C5 PFNA	1 ug/mL
					LCMPFOA 00014		13C4 PFOA	1 ug/mL
					LCMPFOS 00022	200 uL	13C4 PFOS	0.956 ug/mL
					LCMPFUdA 00011		13C2 PFUnA	1 ug/mL
LCd-NEtFOSA-M 00005	06/10/21	WE	LLINGTON, Lot dNEtFOSA06	16M	(Purchased Reag		d-N-EtFOSA-M	50 ug/mL
LCd-NMeFOSA-M 00004	06/10/21		LLINGTON, Lot dNMeFOSA06		(Purchased Reag		d-N-MeFOSA-M	50 ug/mL
LCd3-NMeFOSAA 00004	11/22/21		LLINGTON, Lot d3NMeFOSAA		(Purchased Reag	ent)	d3-NMeFOSAA	50 ug/mL
LCd5-NEtFOSAA 00004	11/22/21		LLINGTON, Lot d5NEtFOSAA		(Purchased Reag		d5-NEtFOSAA	50 ug/mL
LCM2-6:FTS 00004	02/17/22		ELLINGTON, Lot M262FTS02		(Purchased Reag		M2-6:2FTS	47.5 ug/mL
LCM2-8:2FTS 00004	08/22/21		ELLINGTON, Lot M282FTS08		(Purchased Reag		M2-8:2FTS	47.9 ug/mL
LCM2PFHxDA 00010	01/07/21		on Laboratories, Lot M2F		(Purchased Reag		13C2-PFHxDA	50 ug/mL
LCM2PFTeDA 00009	12/07/20		on Laboratories, Lot M2P		(Purchased Reag		13C2-PFTeDA	50 ug/mL
LCM4PFHPA 00009	05/27/21		ton Laboratories, Lot M41	PFHpA0516	(Purchased Reag		13C4-PFHpA	50 ug/mL
LCM5PFPEA 00010	11/22/21		ton Laboratories, Lot M5		(Purchased Reag		13C5 PFPeA	50 ug/mL
LCM8FOSA 00013	12/22/20		ton Laboratories, Lot M81		(Purchased Reag		13C8 FOSA	50 ug/mL
LCMPFBA 00010	05/24/21		gton Laboratories, Lot M		(Purchased Reag		13C4 PFBA	50 ug/mL
LCMPFDA 00015	09/30/21		gton Laboratories, Lot M		(Purchased Reag		13C2 PFDA	50 ug/mL
LCMPFDoA 00010	04/08/21		ton Laboratories, Lot MF		(Purchased Reag		13C2 PFDoA	50 ug/mL

Lab N	Name:	TestAmerica	Sacramento	No.:	320-	- ムッィ	32-	·1

					Reagent	Parent Reage	nt		
Reagent ID	Exp Date	Prep Date	Dilutant Used		Final Volume	Reagent ID	Volume Added	Analyte	Concentration
LCMPFHxA 00016	11/22/21	Welling	ton Laboratories,	Lot	MPFHxA1116	(Purchased Read	gent)	13C2 PFHxA	50 ug/mI
LCMPFHxS 00010	02/17/22	Welling	ton Laboratories,	Lot 1	MPFHxS0217	(Purchased Read	rent)	1802 PFHxS	47.3 ug/mI
LCMPFNA 00010	09/30/21	Welling	ton Laboratories,	Lot	MPFNA0916	(Purchased Read	rent)	13C5 PFNA	50 ug/mI
LCMPFOA 00014	04/12/22		ton Laboratories,			(Purchased Read		13C4 PFOA	50 ug/mI
LCMPFOS 00022	12/12/21		ton Laboratories,			(Purchased Read		13C4 PFOS	47.8 ug/mI
LCMPFUdA 00011	11/22/21		ton Laboratories,			(Purchased Read		13C2 PFUnA	50 ug/mI
.LCPFC_ALL_SP_00001			Methanol, Lot 15			LCPFC2SP_00037	1000 uL	Sodium 1H,1H,2H,2H-perfluorohexane sulfonate (4:2)	0.0934 ug/mI
								Sodium 1H,1H,2H,2H-perfluorooctane sulfonate (6:2)	0.0948 ug/mI
								Sodium 1H,1H,2H,2H-perfluorodecane sulfonate (8:2)	0.0958 ug/mI
								N-ethylperfluoro-1-octanesulfo namide	_
								N-ethyl perfluorooctane sulfonamidoacetic acid	0.1 ug/mI
								MeFOSA	0.1 ug/mI
								N-methyl perfluorooctane sulfonamidoacetic acid	0.1 ug/mI
						LCPFCSP_00103	1000 uL	Perfluorobutanoic acid (PFBA)	0.1 ug/mI
								Perfluorobutanesulfonic acid (PFBS)	0.0884 ug/mI
								Perfluorodecanoic acid (PFDA)	0.1 ug/mI
								Perfluorododecanoic acid (PFDoA)	0.1 ug/mI
								Perfluorodecanesulfonic acid (PFDS)	0.0964 ug/mI
								Perfluoroheptanoic acid (PFHpA)	0.1 ug/mI
								Perfluoroheptanesulfonic Acid (PFHpS)	0.0952 ug/mI
								Perfluorohexanoic acid (PFHxA)	0.1 ug/mI
								Perfluorohexadecanoic acid	0.1 ug/mI
								Perfluorohexanesulfonic acid (PFHxS)	0.091 ug/mI
								Perfluorononanoic acid (PFNA)	0.1 ug/mI
								Perfluorooctanoic acid (PFOA)	0.1 ug/mI
								Perfluorooctadecanoic acid	0.1 ug/mI
								Perfluorooctanesulfonic acid (PFOS)	0.0928 ug/mI
								Perfluorooctane Sulfonamide (FOSA)	0.1 ug/mI
								Perfluoropentanoic acid (PFPeA)	0.1 ug/mI
								Perfluorotetradecanoic acid (PFTeA)	0.1 ug/mI

Lab Name: TestAmerica Sacramento Job No.: 320-29732-1

				Reagent	Parent Reage	ent		
	Exp	Prep	Dilutant	Final		Volume		
Reagent ID	Date	Date	Used	Volume	Reagent ID	Added	Analyte	Concentration
							Perfluorotridecanoic Acid (PFTriA)	0.1 ug/mL
							Perfluoroundecanoic acid (PFUnA)	0.1 ug/mL
LCPFC2SP_00037	01/07/18	07/07/17	Methanol, Lot 104453	10 mI	LC4:2FTS_00002	200 uL	Sodium 1H,1H,2H,2H-perfluorohexane sulfonate (4:2)	0.934 ug/mL
					LC6:2FTS_00003	200 uL	Sodium 1H,1H,2H,2H-perfluorooctane sulfonate (6:2)	0.948 ug/mL
					LC8:2FTS_00003		Sodium 1H,1H,2H,2H-perfluorodecane sulfonate (8:2)	0.958 ug/mL
					LCN-EtFOSA-M_00004		N-ethylperfluoro-1-octanesulfo namide	1 ug/mL
					LCN-EtFOSAA_00002		N-ethyl perfluorooctane sulfonamidoacetic acid	1 ug/mL
					LCN-MeFOSA-M 00003		MeFOSA	1 ug/mL
					LCN-MeFOSAA_00003	200 uL	N-methyl perfluorooctane sulfonamidoacetic acid	1 ug/mL
LC4:2FTS_00002	12/12/21		WELLINGTON, Lot 42FTS121	6	(Purchased Rea	gent)	Sodium 1H,1H,2H,2H-perfluorohexane sulfonate (4:2)	46.7 ug/mL
LC6:2FTS_00003	06/25/21		WELLINGTON, Lot 62FTS061	6	(Purchased Rea	gent)	Sodium 1H,1H,2H,2H-perfluorooctane sulfonate (6:2)	47.4 ug/mL
LC8:2FTS_00003	08/22/21		WELLINGTON, Lot 82FTS081	6	(Purchased Rea	gent)	Sodium 1H,1H,2H,2H-perfluorodecane sulfonate (8:2)	47.9 ug/mL
LCN-EtFOSA-M_00004	05/24/21	WE	ELLINGTON, Lot NETFOSA051	6M	(Purchased Rea	gent)	N-ethylperfluoro-1-octanesulfo namide	50 ug/mL
LCN-EtFOSAA_00002	01/20/21		ELLINGTON, Lot NETFOSAA01	16	(Purchased Rea	gent)	N-ethyl perfluorooctane sulfonamidoacetic acid	50 ug/mL
LCN-MeFOSA-M_00003	05/24/21		ELLINGTON, Lot NMeFOSA051		(Purchased Rea		MeFOSA	50 ug/mL
LCN-MeFOSAA_00003	01/20/21	WE	ELLINGTON, Lot NMeFOSAA01	16	(Purchased Rea	gent)	N-methyl perfluorooctane sulfonamidoacetic acid	50 ug/mL
LCPFCSP 00103	12/27/17	06/27/17	Methanol, Lot 090285	10000 uI	LCPFBA 00006		Perfluorobutanoic acid (PFBA)	1 ug/mL
_					LCPFBS_00006	200 uL	Perfluorobutanesulfonic acid (PFBS)	0.884 ug/mL
					LCPFDA 00006	200 uL	Perfluorodecanoic acid (PFDA)	1 ug/mL
					LCPFDoA_00006	200 uL	Perfluorododecanoic acid (PFDoA)	1 ug/mL
					LCPFDS_00005	200 uL	Perfluorodecanesulfonic acid (PFDS)	0.964 ug/mL
					LCPFHpA_00006		Perfluoroheptanoic acid (PFHpA)	1 ug/mL
					LCPFHpS_00010	200 uL	Perfluoroheptanesulfonic Acid (PFHpS)	0.952 ug/mL
					LCPFHxA 00005	200 uL	Perfluorohexanoic acid (PFHxA)	1 ug/mL
					LCPFHxDA_00007		Perfluorohexadecanoic acid	1 ug/mL

Lab	Name: TestAmerica	Sacramento	Job No.: 320-29732-1

				Reagent	Parent Reage	nt		
Reagent ID	Exp Date	-	Dilutant Used	Final Volume	Reagent ID	Volume Added	Analyte	Concentration
					LCPFHxS-br_00003	200 uL	Perfluorohexanesulfonic acid (PFHxS)	0.91 ug/mL
					LCPFNA 00007	200 uL	Perfluorononanoic acid (PFNA)	1 ug/mL
					LCPFOA 00007	200 uL	Perfluorooctanoic acid (PFOA)	1 ug/mL
					LCPFODA 00007	200 uL	Perfluorooctadecanoic acid	1 ug/mL
					LCPFOS-br_00003	200 uL	Perfluorooctanesulfonic acid (PFOS)	0.928 ug/mL
					LCPFOSA_00010		Perfluorooctane Sulfonamide (FOSA)	1 ug/mL
					LCPFPeA_00006		Perfluoropentanoic acid (PFPeA)	1 ug/mL
					LCPFTeDA_00005		Perfluorotetradecanoic acid (PFTeA)	1 ug/mL
					LCPFTrDA_00005		Perfluorotridecanoic Acid (PFTriA)	1 ug/mL
					LCPFUdA_00006		Perfluoroundecanoic acid (PFUnA)	1 ug/mL
LCPFBA_00006	05/27/21		gton Laboratories, Lot		(Purchased Read		Perfluorobutanoic acid (PFBA)	50 ug/mL
LCPFBS_00006	03/15/21		ton Laboratories, Lot I		(Purchased Read	,	Perfluorobutanesulfonic acid (PFBS)	44.2 ug/mL
LCPFDA_00006	05/31/21		gton Laboratories, Lot		(Purchased Read		Perfluorodecanoic acid (PFDA)	50 ug/mL
LCPFDoA_00006	05/31/21	-	ton Laboratories, Lot F		(Purchased Read	gent)	Perfluorododecanoic acid (PFDoA)	50 ug/mL
LCPFDS_00005	07/02/20	Welling	ton Laboratories, Lot I	LPFDS0615	(Purchased Read	gent)	Perfluorodecanesulfonic acid (PFDS)	48.2 ug/mL
LCPFHpA_00006	01/22/21		ton Laboratories, Lot F	=	(Purchased Read	gent)	Perfluoroheptanoic acid (PFHpA)	50 ug/mL
LCPFHpS_00010	11/06/20	_	ton Laboratories, Lot L	_	(Purchased Read	-	Perfluoroheptanesulfonic Acid (PFHpS)	47.6 ug/mL
LCPFHxA_00005	12/22/20		gton Laboratories, Lot E		(Purchased Read	gent)	Perfluorohexanoic acid (PFHxA)	50 ug/mL
LCPFHxDA_00007	05/25/21		ton Laboratories, Lot P		(Purchased Read		Perfluorohexadecanoic acid	50 ug/mL
LCPFHxS-br_00003	07/03/20	_	on Laboratories, Lot br		(Purchased Read	gent)	Perfluorohexanesulfonic acid (PFHxS)	45.5 ug/mL
LCPFNA 00007	10/23/20		gton Laboratories, Lot		(Purchased Read		Perfluorononanoic acid (PFNA)	50 ug/mL
LCPFOA 00007	08/02/21		gton Laboratories, Lot		(Purchased Read		Perfluorooctanoic acid (PFOA)	50 ug/mL
LCPFODA 00007	04/29/21	Welling	gton Laboratories, Lot E	PFODA0416	(Purchased Read		Perfluorooctadecanoic acid	50 ug/mL
LCPFOS-br_00003	10/14/20	_	on Laboratories, Lot br		(Purchased Read	-	Perfluorooctanesulfonic acid (PFOS)	46.4 ug/mL
LCPFOSA_00010	09/30/21		gton Laboratories, Lot F		(Purchased Read	-	Perfluorooctane Sulfonamide (FOSA)	50 ug/mL
LCPFPeA_00006	05/31/21		ton Laboratories, Lot F		(Purchased Read	-	Perfluoropentanoic acid (PFPeA)	50 ug/mL
LCPFTeDA_00005	12/09/20	_	ton Laboratories, Lot P		(Purchased Read	-	Perfluorotetradecanoic acid (PFTeA)	50 ug/mL
LCPFTrDA_00005	02/12/21	_	ton Laboratories, Lot P		(Purchased Read	_	Perfluorotridecanoic Acid (PFTriA)	50 ug/mL
LCPFUdA_00006	08/19/20		gton Laboratories, Lot F		(Purchased Read	-	Perfluoroundecanoic acid (PFUnA)	50 ug/mL
.LCPFCIS_00003	12/30/17		Methanol, Lot 14139		LCM2PFOA_00005		13C2-PFOA	5 ug/mL
LCM2PFOA 00005	06/19/18	Welling	ton Laboratories, Lot M	2PF0A0613	(Purchased Read	gent)	13C2-PFOA	50 ug/mL

Lab	Name:	TestAmerica	Sacramento	Job No.: 320-29732-1

				Reagent	Parent Reag	ent		
	Exp I	Prep	Dilutant	Final		Volume		
Reagent ID		Date	Used	Volume	Reagent ID	Added	Analyte	Concentration
LCPFC FULL-L2 00004	09/02/17 05/	/30/17	MeOH/H2O, Lot 090285	5 mL	LCMPFC2SU 00019	250 uL	d-N-EtFOSA-M	50 ng/mL
					_		d-N-MeFOSA-M	50 ng/mL
							d3-NMeFOSAA	50 ng/mL
							d5-NEtFOSAA	50 ng/mL
							M2-6:2FTS	47.5 ng/mL
							M2-8:2FTS	47.9 ng/mL
					LCMPFCSU 00069	250 uL	13C2-PFHxDA	50 ng/mL
					_		13C2-PFTeDA	50 ng/mL
							13C4-PFHpA	50 ng/mL
							13C5 PFPeA	50 ng/mL
							13C8 FOSA	50 ng/mL
							13C4 PFBA	50 ng/mL
							13C2 PFDA	50 ng/mL
							13C2 PFDoA	50 ng/mL
							13C2 PFHxA	50 ng/mL
							1802 PFHxS	47.3 ng/mL
							13C5 PFNA	50 ng/mL
							13C4 PFOA	50 ng/mL
							13C4 PFOS	47.8 ng/mL
							13C2 PFUnA	50 ng/mL
					LCPFCSP 00097	50 uL	Perfluorobutanoic acid (PFBA)	1 ng/mL
							Perfluorobutanesulfonic acid	0.884 ng/mL
							(PFBS)	, , , , ,
						Perfluorodecanoic acid (PFDA)	1 ng/mL	
							Perfluorododecanoic acid (PFDoA)	1 ng/mL
							Perfluorodecanesulfonic acid (PFDS)	0.964 ng/mL
							Perfluoroheptanoic acid	1 ng/mL
							(PFHpA)	0.050/
							Perfluoroheptanesulfonic Acid (PFHpS)	0.952 ng/mL
							Perfluorohexanoic acid (PFHxA)	
							Perfluorohexanesulfonic acid (PFHxS)	0.91 ng/mL
							Perfluorononanoic acid (PFNA)	1 ng/mL
							Perfluorooctanoic acid (PFOA)	1 ng/mL
							Perfluorooctanesulfonic acid	0.928 ng/mL
							(PFOS)	
							Perfluorooctane Sulfonamide	1 ng/mL
							(FOSA)	
							Perfluoropentanoic acid (PFPeA)	1 ng/mL
							Perfluorotetradecanoic acid	1 ng/mL
							(PFTeA)	119,111
							Perfluorotridecanoic Acid (PFTriA)	1 ng/mL
							Perfluoroundecanoic acid	1 ng/mL
							(PFUnA)	1 119/11111

Lab Name: TestAmerica Sacramento Job No.: 320-29732-1	
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				Reagent	Parent Reagen	ıt		
	Exp	Prep	Dilutant	Final		Volume		
Reagent ID	Date	Date	Used	Volume	Reagent ID	Added	Analyte	Concentration
.LCMPFC2SU 00019	11/30/17	05/30/17	Methanol, Lot 104453	5000 uL	LCd-NEtFOSA-M 00005		d-N-EtFOSA-M	1 ug/mI
_					LCd-NMeFOSA-M 00004	100 uL	d-N-MeFOSA-M	1 ug/mI
					LCd3-NMeFOSAA 00004	100 uL	d3-NMeFOSAA	1 ug/mI
					LCd5-NEtFOSAA 00004	100 uL	d5-NEtFOSAA	1 ug/mI
					LCM2-6:FTS 00004	100 uL	M2-6:2FTS	0.95 ug/mI
					LCM2-8:2FTS 00004	100 uL	M2-8:2FTS	0.958 ug/ml
LCd-NEtFOSA-M 00005	06/10/21	WE	LLINGTON, Lot dNEtFOSA0	0616M	(Purchased Reage	ent)	d-N-EtFOSA-M	50 ug/m
LCd-NMeFOSA-M 00004	06/10/21		LLINGTON, Lot dNMeFOSA0	0616M	(Purchased Reage	ent)	d-N-MeFOSA-M	50 ug/mi
LCd3-NMeFOSAA 00004	11/22/21		LLINGTON, Lot d3NMeFOSA	A1116	(Purchased Reage	ent)	d3-NMeFOSAA	50 ug/m
LCd5-NEtFOSAA 00004	11/22/21		LLINGTON, Lot d5NEtFOSA		(Purchased Reage	ent)	d5-NEtFOSAA	50 ug/m
LCM2-6:FTS 00004	02/17/22		ELLINGTON, Lot M262FTS0		(Purchased Reage		M2-6:2FTS	47.5 ug/m
LCM2-8:2FTS 00004	08/22/21		ELLINGTON, Lot M282FTS0		(Purchased Reage		M2-8:2FTS	47.9 ug/m
.LCMPFCSU_00069			Methanol, Lot Baker 141039		LCM2PFHxDA_00009		13C2-PFHxDA	1 ug/mI
					LCM2PFTeDA 00008	200 uL	13C2-PFTeDA	1 ug/ml
					LCM4PFHPA 00008	200 uT	13C4-PFHpA	1 ug/m
					LCM5PFPEA 00009		13C5 PFPeA	1 ug/m
					LCM8FOSA 00012		13C8 FOSA	1 ug/m
					LCMPFBA 00009		13C4 PFBA	1 ug/m
					LCMPFDA 00013		13C2 PFDA	1 ug/m
					LCMPFDoA 00009		13C2 PFDoA	1 ug/m
					LCMPFHxA 00014		13C2 PFHxA	1 ug/m
					LCMPFHxS 00009		1802 PFHxS	0.946 ug/m
					LCMPFNA 00009		13C5 PFNA	1 ug/m
					LCMPFOA 00013		13C4 PFOA	1 ug/m
					LCMPFOS 00020		13C4 PFOS	0.956 ug/mi
					LCMPFUdA 00010		13C2 PFUnA	1 ug/m
LCM2PFHxDA 00009	01/07/21	Wellingt	l on Laboratories, Lot M2) DFH ~ DA 1112	(Purchased Reage		13C2-PFHxDA	50 ug/mi
LCM2PFTeDA 00008	12/07/20		on Laboratories, Lot M2		(Purchased Reage		13C2-PFTeDA	50 ug/m
LCM4PFHPA 00008	05/27/21		ton Laboratories, Lot Ma		(Purchased Reage		13C4-PFHpA	50 ug/m
LCM5PFPEA 00009	11/22/21	Wellingt	ton Laboratories, Lot M	5DFDe71116	(Purchased Reage		13C5 PFPeA	50 ug/m
LCM8FOSA 00012	12/22/21		ton Laboratories, Lot M		(Purchased Reage	ent)	13C8 FOSA	50 ug/m
LCMPFBA 00009	05/24/21		ton Laboratories, Lot M		(Purchased Reage		13C4 PFBA	50 ug/m
LCMPFDA 00013	09/30/21		gton Laboratories, Lot N		(Purchased Reage		13C2 PFDA	50 ug/m
LCMPFDOA 00009	04/08/21		ton Laboratories, Lot M		(Purchased Reage		13C2 PFDOA	50 ug/m
LCMPFHxA 00014	11/22/21		ton Laboratories, Lot M		(Purchased Reage	ent)	13C2 PFHXA	50 ug/m
LCMPFHXA 00014	10/23/20		ton Laboratories, Lot M		(Purchased Reage	ont)	1802 PFHXS	47.3 ug/m
LCMPFNA 00009	09/30/21		gton Laboratories, Lot M		(Purchased Reage		13C5 PFNA	50 ug/m
LCMPFNA_00009	10/18/21		gton Laboratories, Lot M		(Purchased Reage		13C4 PFOA	50 ug/m.
LCMPFOS 00020	12/12/21		gton Laboratories, Lot I		(Purchased Reage		13C4 PFOA	47.8 ug/ml
LCMPFUGA 00010	11/22/21		ton Laboratories, Lot M		(Purchased Reage		13C4 PFOS 13C2 PFUnA	50 ug/ml
.LCPFCSP 00097	09/02/17		Methanol, Lot 157237	10000 ***	LCPFCSP 00096		Perfluorobutanoic acid (PFBA)	0.1 ug/ml
· TCLLCOL OUDA!	09/02/1/	03/30/1/	reclianor, not 13/23/	10000 aL	TCLLCSL_000A0	1000 UL	Perfluorobutanesulfonic acid (PFBA) (PFBS)	0.1 ug/mI 0.0884 ug/mI
							Perfluorodecanoic acid (PFDA)	0.1 ug/ml
							Perfluorododecanoic acid	0.1 ug/mI
							(PFDoA)	

Lab Name: TestAmerica Sacramento	Job No.: 320-29732-1
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			Reagent	Parent Reag	rent		
Exp	Prep	Dilutant	Final		Volume		
Reagent ID Date	_	Used	Volume	Reagent ID	Added	Analyte	Concentration
						Perfluorodecanesulfonic acid (PFDS)	0.0964 ug/mL
						Perfluoroheptanoic acid (PFHpA)	0.1 ug/mL
						Perfluoroheptanesulfonic Acid	0.0952 ug/mL
						(PFHpS) Perfluorohexanoic acid (PFHxA)	0.1 ug/mL
						Perfluorohexanesulfonic acid (PFHxS)	0.091 ug/mL
						Perfluorononanoic acid (PFNA)	0.1 ug/mL
						Perfluorooctanoic acid (PFOA)	0.1 ug/mL
						Perfluorooctanesulfonic acid	0.0928 ug/mL
						(PFOS) Perfluorooctane Sulfonamide	0.1 ug/mL
						(FOSA)	0.1 49/112
						Perfluoropentanoic acid (PFPeA)	0.1 ug/mL
						Perfluorotetradecanoic acid (PFTeA)	0.1 ug/mL
						Perfluorotridecanoic Acid (PFTriA)	0.1 ug/mL
						Perfluoroundecanoic acid (PFUnA)	0.1 ug/mL
LCPFCSP_00096 09/02/	17 05/24/17	Methanol, Lot 090285	10000 uL	LCPFBA_00006		Perfluorobutanoic acid (PFBA)	1 ug/mL
_				LCPFBS_00006		Perfluorobutanesulfonic acid (PFBS)	0.884 ug/mL
				LCPFDA_00006		Perfluorodecanoic acid (PFDA)	1 ug/mL
				LCPFDoA_00006	200 uL	Perfluorododecanoic acid (PFDoA)	1 ug/mL
				LCPFDS_00005	200 uL	Perfluorodecanesulfonic acid (PFDS)	0.964 ug/mL
				LCPFHpA_00006	200 uL	Perfluoroheptanoic acid (PFHpA)	1 ug/mL
				LCPFHpS_00010	200 uL	Perfluoroheptanesulfonic Acid (PFHpS)	0.952 ug/mL
				LCPFHxA 00005	200 uL	Perfluorohexanoic acid (PFHxA)	1 ug/mL
				LCPFHxS-br_00003	200 uL	Perfluorohexanesulfonic acid (PFHxS)	0.91 ug/mL
				LCPFNA 00007	200 uL	Perfluorononanoic acid (PFNA)	1 ug/mL
				LCPFOA 00007	200 uL	Perfluorooctanoic acid (PFOA)	1 ug/mL
				LCPFOS-br_00003		Perfluorooctanesulfonic acid (PFOS)	0.928 ug/mL
				LCPFOSA_00009	200 uL	Perfluorooctane Sulfonamide (FOSA)	1 ug/mL
				LCPFPeA_00006	200 uL	Perfluoropentanoic acid (PFPeA)	1 ug/mL
				LCPFTeDA_00005	200 uL	Perfluorotetradecanoic acid (PFTeA)	1 ug/mL
				LCPFTrDA_00005	200 uL	Perfluorotridecanoic Acid (PFTriA)	1 ug/mL

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				Reagent	Parent Reager	nt		
Reagent ID	Exp Date	Prep Date	Dilutant Used	Final Volume	Reagent ID	Volume Added	Analyte	Concentration
					LCPFUdA_00006		Perfluoroundecanoic acid (PFUnA)	1 ug/mI
LCPFBA 00006	05/27/21	Wellin	gton Laboratories, Lot	PFBA0516	(Purchased Reag		Perfluorobutanoic acid (PFBA)	50 ug/mI
LCPFBS_00006	03/15/21	· ·	gton Laboratories, Lot		(Purchased Reag	ent)	Perfluorobutanesulfonic acid (PFBS)	44.2 ug/mI
LCPFDA_00006	05/31/21	Wellin	gton Laboratories, Lot	PFDA0516	(Purchased Reag		Perfluorodecanoic acid (PFDA)	50 ug/mI
LCPFDoA_00006	05/31/21	-	gton Laboratories, Lot		(Purchased Reag	,	Perfluorododecanoic acid (PFDoA)	50 ug/mI
LCPFDS_00005	07/02/20	· ·	gton Laboratories, Lot		(Purchased Reag		Perfluorodecanesulfonic acid (PFDS)	48.2 ug/mI
LCPFHpA_00006	01/22/21		gton Laboratories, Lot		(Purchased Reag		Perfluoroheptanoic acid (PFHpA)	50 ug/mI
LCPFHpS_00010	11/06/20	_	ton Laboratories, Lot I	_	(Purchased Reag		Perfluoroheptanesulfonic Acid (PFHpS)	47.6 ug/mI
LCPFHxA_00005	12/22/20		gton Laboratories, Lot		(Purchased Reag		Perfluorohexanoic acid (PFHxA)	50 ug/mI
LCPFHxS-br_00003	07/03/20	_	on Laboratories, Lot br		(Purchased Reag		Perfluorohexanesulfonic acid (PFHxS)	45.5 ug/mI
LCPFNA_00007	10/23/20		gton Laboratories, Lot		(Purchased Reag		Perfluorononanoic acid (PFNA)	50 ug/mI
LCPFOA_00007	08/02/21		gton Laboratories, Lot		(Purchased Reag		Perfluorooctanoic acid (PFOA)	50 ug/mI
LCPFOS-br_00003	10/14/20	_	con Laboratories, Lot b		(Purchased Reag		Perfluorooctanesulfonic acid (PFOS)	46.4 ug/mI
LCPFOSA_00009	09/02/17	-	gton Laboratories, Lot		(Purchased Reag		Perfluorooctane Sulfonamide (FOSA)	50 ug/mI
LCPFPeA_00006	05/31/21		gton Laboratories, Lot		(Purchased Reag		Perfluoropentanoic acid (PFPeA)	50 ug/mI
LCPFTeDA_00005	12/09/20	_	ton Laboratories, Lot F		(Purchased Reag		Perfluorotetradecanoic acid (PFTeA)	50 ug/mI
LCPFTrDA_00005	02/12/21	_	ton Laboratories, Lot F		(Purchased Reag		Perfluorotridecanoic Acid (PFTriA)	50 ug/mI
LCPFUdA_00006	08/19/20		gton Laboratories, Lot		(Purchased Reag	ent)	Perfluoroundecanoic acid (PFUnA)	50 ug/mI
LCPFC_FULL-L2_00006	12/27/17	07/07/17	MeOH/H2O, Lot 090285	5000 uI	LCMPFC_ALL_SU_00001	250 uL	d-N-EtFOSA-M	50 ng/mI
							d-N-MeFOSA-M	50 ng/mI
							d3-NMeFOSAA	50 ng/mI
							d5-NEtFOSAA	50 ng/mI
							M2-6:2FTS	47.5 ng/mI
							M2-8:2FTS	47.9 ng/mI
							13C2-PFHxDA	50 ng/mI
							13C2-PFTeDA	50 ng/mI
							13C4-PFHpA	50 ng/mI
							13C5 PFPeA	50 ng/mI
							13C8 FOSA	50 ng/mI
							13C4 PFBA	50 ng/mI
							13C2 PFDA	50 ng/mI
							13C2 PFDoA 13C2 PFHxA	50 ng/mI 50 ng/mI
							1802 PFHXS	47.3 ng/ml
							13C5 PFNA	50 ng/mI
							13C4 PFOA	50 ng/mI

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		Reagent	Parent Reage	nt		
Reagent ID	Prep Date	Final Volume	Reagent ID	Volume Added	- Analyte	Concentration
					13C4 PFOS	47.8 ng/mI
					13C2 PFUnA	50 ng/mI
			LCPFC_ALL_SP_00001	50 uL	Sodium 1H,1H,2H,2H-perfluorohexane sulfonate (4:2)	0.934 ng/mI
					Sodium 1H,1H,2H,2H-perfluorooctane sulfonate (6:2)	0.948 ng/mI
					Sodium 1H,1H,2H,2H-perfluorodecane sulfonate (8:2)	0.958 ng/mI
					N-ethylperfluoro-1-octanesulfo namide	1 ng/mI
					N-ethyl perfluorooctane sulfonamidoacetic acid	1 ng/mI
					MeFOSA	1 ng/mI
					N-methyl perfluorooctane sulfonamidoacetic acid	1 ng/mI
					Perfluorobutanoic acid (PFBA)	1 ng/mI
					Perfluorobutanesulfonic acid (PFBS)	0.884 ng/mI
					Perfluorodecanoic acid (PFDA)	1 ng/mI
					Perfluorododecanoic acid (PFDoA)	1 ng/mI
					Perfluorodecanesulfonic acid (PFDS)	0.964 ng/mI
					Perfluoroheptanoic acid (PFHpA)	1 ng/mI
					Perfluoroheptanesulfonic Acid (PFHpS)	0.952 ng/mI
					Perfluorohexanoic acid (PFHxA)	1 ng/mI
					Perfluorohexadecanoic acid	1 ng/mI
					Perfluorohexanesulfonic acid (PFHxS)	0.91 ng/mI
					Perfluorononanoic acid (PFNA)	1 ng/mI
					Perfluorooctanoic acid (PFOA)	1 ng/mI
					Perfluorooctadecanoic acid	1 ng/mI
					Perfluorooctanesulfonic acid (PFOS)	0.928 ng/mI
					Perfluorooctane Sulfonamide (FOSA)	1 ng/mI
					Perfluoropentanoic acid (PFPeA)	1 ng/mI
					Perfluorotetradecanoic acid (PFTeA)	1 ng/mI
					Perfluorotridecanoic Acid (PFTriA)	1 ng/mI
					Perfluoroundecanoic acid (PFUnA)	1 ng/mI
			LCPFCIS 00003	50 uT.	13C2-PFOA	50 ng/mI

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				Reagent	Parent Reage	nt		
	Exp	Prep	Dilutant	Final		Volume		
Reagent ID	Date	Date	Used	Volume	Reagent ID	Added	Analyte	Concentration
.LCMPFC_ALL_SU_00001	12/29/17	06/29/17	Methanol, Lot Baker 141039	10000 uL	LCd-NEtFOSA-M_00005	200 uL	d-N-EtFOSA-M	1 ug/mI
			111003		LCd-NMeFOSA-M 00004	200 uL	d-N-MeFOSA-M	1 ug/mI
					LCd3-NMeFOSAA 00004	200 uL	d3-NMeFOSAA	1 ug/mI
					LCd5-NEtFOSAA 00004		d5-NEtFOSAA	1 ug/mI
					LCM2-6:FTS 00004	200 uL	M2-6:2FTS	0.95 ug/ml
					LCM2-8:2FTS_00004	200 uL	M2-8:2FTS	0.958 ug/mI
					LCM2PFHxDA_00010	200 uL	13C2-PFHxDA	1 ug/mI
					LCM2PFTeDA 00009		13C2-PFTeDA	1 ug/mI
					LCM4PFHPA 00009	200 uL	13C4-PFHpA	1 ug/mI
					LCM5PFPEA 00010	200 uL	13C5 PFPeA	1 ug/mI
					LCM8FOSA 00013		13C8 FOSA	1 ug/mI
					LCMPFBA 00010		13C4 PFBA	1 ug/mI
					LCMPFDA 00015	200 uL	13C2 PFDA	1 ug/mI
					LCMPFDoA 00010	200 uL	13C2 PFDoA	1 ug/mI
					LCMPFHxA 00016	200 uL	13C2 PFHxA	1 ug/mI
					LCMPFHxS 00010	200 uL	1802 PFHxS	0.946 ug/mI
					LCMPFNA 00010	200 uL	13C5 PFNA	1 ug/mI
					LCMPFOA 00014	200 uL	13C4 PFOA	1 ug/mI
					LCMPFOS 00022		13C4 PFOS	0.956 ug/mI
					LCMPFUdA 00011		13C2 PFUnA	1 ug/mI
LCd-NEtFOSA-M 00005	06/10/21	WE	LLINGTON, Lot dNEtFOSA06	516M	(Purchased Read	gent)	d-N-EtFOSA-M	50 ug/mI
LCd-NMeFOSA-M 00004	06/10/21	WE	LLINGTON, Lot dNMeFOSA06	516M	(Purchased Read	gent)	d-N-MeFOSA-M	50 ug/mI
LCd3-NMeFOSAA_00004	11/22/21	WEI	LINGTON, Lot d3NMeFOSAA	1116	(Purchased Read		d3-NMeFOSAA	50 ug/mI
LCd5-NEtFOSAA 00004	11/22/21	WEI	LINGTON, Lot d5NEtFOSAA	1116	(Purchased Read		d5-NEtFOSAA	50 ug/mI
LCM2-6:FTS_00004	02/17/22		ELLINGTON, Lot M262FTS02		(Purchased Read	gent)	M2-6:2FTS	47.5 ug/mI
LCM2-8:2FTS_00004	08/22/21		ELLINGTON, Lot M282FTS08		(Purchased Read		M2-8:2FTS	47.9 ug/mI
LCM2PFHxDA_00010	01/07/21		on Laboratories, Lot M21		(Purchased Read		13C2-PFHxDA	50 ug/mI
LCM2PFTeDA 00009	12/07/20		on Laboratories, Lot M21		(Purchased Read		13C2-PFTeDA	50 ug/mI
LCM4PFHPA 00009	05/27/21	Wellingt	on Laboratories, Lot M4	PFHpA0516	(Purchased Read		13C4-PFHpA	50 ug/mI
LCM5PFPEA_00010	11/22/21	Wellingt	on Laboratories, Lot M5	PFPeA1116	(Purchased Read		13C5 PFPeA	50 ug/mI
LCM8FOSA_00013	12/22/20	Wellingt	on Laboratories, Lot M8	FOSA1215I	(Purchased Read		13C8 FOSA	50 ug/mI
LCMPFBA_00010	05/24/21		ton Laboratories, Lot M		(Purchased Read		13C4 PFBA	50 ug/mI
LCMPFDA_00015	09/30/21		ton Laboratories, Lot M		(Purchased Read		13C2 PFDA	50 ug/mI
LCMPFDoA_00010	04/08/21		ton Laboratories, Lot ME		(Purchased Read		13C2 PFDoA	50 ug/mI
LCMPFHxA_00016	11/22/21		ton Laboratories, Lot MI		(Purchased Read		13C2 PFHxA	50 ug/mI
LCMPFHxS_00010	02/17/22		ton Laboratories, Lot ME		(Purchased Read		1802 PFHxS	47.3 ug/mI
LCMPFNA_00010	09/30/21		ton Laboratories, Lot M		(Purchased Read		13C5 PFNA	50 ug/mI
LCMPFOA_00014	04/12/22		ton Laboratories, Lot M		(Purchased Read		13C4 PFOA	50 ug/mI
LCMPFOS_00022	12/12/21		rton Laboratories, Lot M		(Purchased Read		13C4 PFOS	47.8 ug/mI
LCMPFUdA_00011	11/22/21		ton Laboratories, Lot M		(Purchased Read		13C2 PFUnA	50 ug/mI
.LCPFC_ALL_SP_00001	12/27/17	07/07/17	Methanol, Lot 157237	10000 uL	LCPFC2SP_00037	1000 uL	Sodium 1H,1H,2H,2H-perfluorohexane sulfonate (4:2)	0.0934 ug/mI
							Sodium 1H,1H,2H,2H-perfluorooctane sulfonate (6:2)	0.0948 ug/mI

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				Reagent	Parent Reag	rent		
	Exp	Prep	Dilutant	Final		Volume		
Reagent ID	Date	Date	Used	Volume	Reagent ID	Added	Analyte	Concentration
							Sodium 1H,1H,2H,2H-perfluorodecane sulfonate (8:2)	0.0958 ug/mL
							N-ethylperfluoro-1-octanesulfo namide	0.1 ug/mL
							N-ethyl perfluorooctane sulfonamidoacetic acid	0.1 ug/mL
							MeFOSA	0.1 ug/mL
							N-methyl perfluorooctane sulfonamidoacetic acid	0.1 ug/mL
					LCPFCSP_00103	1000 uL	Perfluorobutanoic acid (PFBA)	0.1 ug/mL
							Perfluorobutanesulfonic acid (PFBS)	0.0884 ug/mL
							Perfluorodecanoic acid (PFDA)	0.1 ug/mL
							Perfluorododecanoic acid (PFDoA)	0.1 ug/mL
							Perfluorodecanesulfonic acid (PFDS)	0.0964 ug/mL
							Perfluoroheptanoic acid (PFHpA)	0.1 ug/mL
							Perfluoroheptanesulfonic Acid (PFHpS)	0.0952 ug/mL
							Perfluorohexanoic acid (PFHxA)	0.1 ug/mL
							Perfluorohexadecanoic acid Perfluorohexanesulfonic acid	0.1 ug/mL
							(PFHxS)	0.091 ug/mL
							Perfluorononanoic acid (PFNA)	0.1 ug/mL
							Perfluorooctanoic acid (PFOA)	0.1 ug/mL
							Perfluorooctadecanoic acid	0.1 ug/mL
							Perfluorooctanesulfonic acid (PFOS)	0.0928 ug/mL
							Perfluorooctane Sulfonamide (FOSA)	0.1 ug/mL
							Perfluoropentanoic acid (PFPeA)	0.1 ug/mL
							Perfluorotetradecanoic acid (PFTeA)	0.1 ug/mL
							Perfluorotridecanoic Acid (PFTriA)	0.1 ug/mL
							Perfluoroundecanoic acid (PFUnA)	0.1 ug/mL
LCPFC2SP_00037	01/07/18	07/07/17	Methanol, Lot 104453	10 mL	LC4:2FTS_00002	200 uL	Sodium 1H,1H,2H,2H-perfluorohexane sulfonate (4:2)	0.934 ug/mL
					LC6:2FTS_00003	200 uL	Sodium 1H,1H,2H,2H-perfluorooctane sulfonate (6:2)	0.948 ug/mL
					LC8:2FTS_00003	200 uL	Sodium 1H,1H,2H,2H-perfluorodecane sulfonate (8:2)	0.958 ug/mL

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				Reagent	Parent Reager	nt		
	Exp	Prep	Dilutant	Final		Volume		
Reagent ID	Date	Date	Used	Volume	Reagent ID	Added	Analyte	Concentration
-					LCN-EtFOSA-M_00004	200 uL	N-ethylperfluoro-1-octanesulfo	1 ug/mL
					LCN-EtFOSAA_00002	200 uL	N-ethyl perfluorooctane sulfonamidoacetic acid	1 ug/mL
					LCN-MeFOSA-M 00003	200 uL		1 ug/mL
					LCN-MeFOSAA_00003	200 uL	N-methyl perfluorooctane sulfonamidoacetic acid	1 ug/mL
LC4:2FTS_00002	12/12/21		WELLINGTON, Lot 42FTS	1216	(Purchased Reag	ent)	Sodium 1H,1H,2H,2H-perfluorohexane sulfonate (4:2)	46.7 ug/mL
LC6:2FTS_00003	06/25/21		WELLINGTON, Lot 62FTS	0616	(Purchased Reag	ent)	Sodium 1H,1H,2H,2H-perfluorooctane sulfonate (6:2)	47.4 ug/mL
LC8:2FTS_00003	08/22/21	WELLINGTON, Lot 82FTS0816			(Purchased Reag	ent)	Sodium 1H,1H,2H,2H-perfluorodecane sulfonate (8:2)	47.9 ug/mL
LCN-EtFOSA-M_00004	05/24/21	WE	ELLINGTON, Lot NETFOSA	.0516M	(Purchased Reag	ent)	N-ethylperfluoro-1-octanesulfo namide	50 ug/mL
LCN-EtFOSAA_00002	01/20/21	WE	ELLINGTON, Lot NETFOSA	A0116	(Purchased Reag	ent)	N-ethyl perfluorooctane sulfonamidoacetic acid	50 ug/mL
LCN-MeFOSA-M 00003	05/24/21	WE	ELLINGTON, Lot NMeFOSA	.0516M	(Purchased Reag	ent)	MeFOSA	50 ug/mL
LCN-MeFOSAA_00003	01/20/21	WE	ELLINGTON, Lot NMeFOSA	A0116	(Purchased Reag	ent)	N-methyl perfluorooctane sulfonamidoacetic acid	50 ug/mL
LCPFCSP_00103	12/27/17	06/27/17	Methanol, Lot 090285	10000 uI	LCPFBA_00006	200 uL		1 ug/mL
					LCPFBS_00006		Perfluorobutanesulfonic acid (PFBS)	0.884 ug/mL
					LCPFDA_00006		Perfluorodecanoic acid (PFDA)	1 ug/mL
					LCPFDoA_00006		Perfluorododecanoic acid (PFDoA)	1 ug/mL
					LCPFDS_00005		Perfluorodecanesulfonic acid (PFDS)	0.964 ug/mL
					LCPFHpA_00006		Perfluoroheptanoic acid (PFHpA)	1 ug/mL
					LCPFHpS_00010		Perfluoroheptanesulfonic Acid (PFHpS)	0.952 ug/mL
					LCPFHxA_00005		Perfluorohexanoic acid (PFHxA)	1 ug/mL
					LCPFHxDA 00007		Perfluorohexadecanoic acid	1 ug/mL
					LCPFHxS-br_00003		Perfluorohexanesulfonic acid (PFHxS)	0.91 ug/mL
					LCPFNA_00007		Perfluorononanoic acid (PFNA)	1 ug/mL
					LCPFOA_00007		Perfluorooctanoic acid (PFOA)	1 ug/mL
					LCPFODA_00007		Perfluorooctadecanoic acid	1 ug/mL
					LCPFOS-br_00003		Perfluorooctanesulfonic acid (PFOS)	0.928 ug/mL
					LCPFOSA_00010		Perfluorooctane Sulfonamide (FOSA)	1 ug/mL
					LCPFPeA_00006	200 uL	(PFPeA)	1 ug/mL
					LCPFTeDA_00005	200 uL	Perfluorotetradecanoic acid (PFTeA)	1 ug/mL

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				Reagent	Parent Reager	nt		
Reagent ID	Exp Date	Prep Date	Dilutant Used	Final Volume	Reagent ID	Volume Added	Analyte	Concentration
					LCPFTrDA_00005		Perfluorotridecanoic Acid (PFTriA)	1 ug/mI
					LCPFUdA_00006		Perfluoroundecanoic acid (PFUnA)	1 ug/mI
LCPFBA_00006	05/27/21	Wellin	gton Laboratories, Lot	PFBA0516	(Purchased Reag		Perfluorobutanoic acid (PFBA)	50 ug/mI
LCPFBS_00006	03/15/21	-	gton Laboratories, Lot		(Purchased Reag	ŕ	Perfluorobutanesulfonic acid (PFBS)	44.2 ug/mI
LCPFDA_00006	05/31/21	Wellin	gton Laboratories, Lot	PFDA0516	(Purchased Reag		Perfluorodecanoic acid (PFDA)	50 ug/mI
LCPFDoA_00006	05/31/21	-	gton Laboratories, Lot		(Purchased Reag		Perfluorododecanoic acid (PFDoA)	50 ug/mI
LCPFDS_00005	07/02/20	-	gton Laboratories, Lot		(Purchased Reag		Perfluorodecanesulfonic acid (PFDS)	48.2 ug/mI
LCPFHpA_00006	01/22/21	Welling	gton Laboratories, Lot	PFHpA0116	(Purchased Reag	ent)	Perfluoroheptanoic acid (PFHpA)	50 ug/mI
LCPFHpS_00010	11/06/20	_	ton Laboratories, Lot 1	-	(Purchased Reag	ent)	Perfluoroheptanesulfonic Acid (PFHpS)	47.6 ug/mI
LCPFHxA 00005	12/22/20	Welling	gton Laboratories, Lot	PFHxA1215	(Purchased Reag		Perfluorohexanoic acid (PFHxA)	50 ug/mI
LCPFHxDA 00007	05/25/21	Welling	ton Laboratories, Lot 1	PFHxDA0516	(Purchased Reag	ent)	Perfluorohexadecanoic acid	50 ug/mI
LCPFHxS-br_00003	07/03/20		on Laboratories, Lot b		(Purchased Reag	ent)	Perfluorohexanesulfonic acid (PFHxS)	45.5 ug/mI
LCPFNA_00007	10/23/20		gton Laboratories, Lot		(Purchased Reag		Perfluorononanoic acid (PFNA)	50 ug/mI
LCPFOA_00007	08/02/21	Wellin	gton Laboratories, Lot	PFOA0716	(Purchased Reag		Perfluorooctanoic acid (PFOA)	50 ug/mI
LCPFODA_00007	04/29/21	Welling	gton Laboratories, Lot	PFODA0416	(Purchased Reag		Perfluorooctadecanoic acid	50 ug/mI
LCPFOS-br_00003	10/14/20		on Laboratories, Lot b		(Purchased Reag		Perfluorooctanesulfonic acid (PFOS)	46.4 ug/mI
LCPFOSA_00010	09/30/21		gton Laboratories, Lot		(Purchased Reag		Perfluorooctane Sulfonamide (FOSA)	50 ug/mI
LCPFPeA_00006	05/31/21		gton Laboratories, Lot		(Purchased Reag		Perfluoropentanoic acid (PFPeA)	50 ug/mI
LCPFTeDA_00005	12/09/20		ton Laboratories, Lot 1		(Purchased Reag	ŕ	Perfluorotetradecanoic acid (PFTeA)	50 ug/mI
LCPFTrDA_00005	02/12/21	_	ton Laboratories, Lot 1		(Purchased Reag		Perfluorotridecanoic Acid (PFTriA)	50 ug/mI
LCPFUdA_00006	08/19/20		gton Laboratories, Lot		(Purchased Reag		Perfluoroundecanoic acid (PFUnA)	50 ug/mI
.LCPFCIS_00003			Methanol, Lot 14139		LCM2PFOA_00005		13C2-PFOA	5 ug/mI
LCM2PFOA_00005	06/19/18	Welling	ton Laboratories, Lot 1	M2PFOA0613	(Purchased Reag	ent)	13C2-PFOA	50 ug/mI
LCPFC FULL-L3 00005	12/27/17	07/07/17	MeOH/H2O, Lot 090285	5000 uL	LCMPFC ALL SU 00001	250 uL	d-N-EtFOSA-M	50 ng/mI
			,				d-N-MeFOSA-M	50 ng/mI
							d3-NMeFOSAA	50 ng/mI
							d5-NEtFOSAA	50 ng/mI
							M2-6:2FTS	47.5 ng/mI
							M2-8:2FTS	47.9 ng/mI
							13C2-PFHxDA	50 ng/mI
							13C2-PFTeDA	50 ng/mI
							13C4-PFHpA	50 ng/mI
							13C5 PFPeA	50 ng/mI
							13C8 FOSA	50 ng/mI
							13C4 PFBA	50 ng/mI

Lab Name: TestAmerica Sacramento	Job No.: 320-29732-1
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				Reagent	Parent Reage	nt		
	Exp	Prep	Dilutant	Final		Volume		
Reagent ID	Date	Date	Used	Volume	Reagent ID	Added	Analyte	Concentration
							13C2 PFDA	50 ng/mL
							13C2 PFDoA	50 ng/mL
							13C2 PFHxA	50 ng/mL
							1802 PFHxS	47.3 ng/mL
							13C5 PFNA	50 ng/mL
							13C4 PFOA	50 ng/mL
							13C4 PFOS	47.8 ng/mL
							13C2 PFUnA	50 ng/mL
					LCPFC ALL SP 00001	250 uL	Sodium	4.67 ng/mL
							1H,1H,2H,2H-perfluorohexane sulfonate (4:2)	
							Sodium	4.74 ng/mL
							1H,1H,2H,2H-perfluorooctane sulfonate (6:2)	
							Sodium	4.79 ng/mL
							1H,1H,2H,2H-perfluorodecane sulfonate (8:2)	, , ,
							N-ethylperfluoro-1-octanesulfo	5 ng/mL
							N-ethyl perfluorooctane sulfonamidoacetic acid	5 ng/mL
							MeFOSA	5 ng/mL
							N-methyl perfluorooctane sulfonamidoacetic acid	5 ng/mL
							Perfluorobutanoic acid (PFBA)	5 ng/mL
							Perfluorobutanesulfonic acid	4.42 ng/mL
							(PFBS)	
							Perfluorodecanoic acid (PFDA)	5 ng/mL
							Perfluorododecanoic acid (PFDoA)	5 ng/mL
							Perfluorodecanesulfonic acid (PFDS)	4.82 ng/mL
							Perfluoroheptanoic acid (PFHpA)	5 ng/mL
							Perfluoroheptanesulfonic Acid (PFHpS)	4.76 ng/mL
							Perfluorohexanoic acid (PFHxA)	5 ng/mL
							Perfluorohexadecanoic acid	5 ng/mL
							Perfluorohexanesulfonic acid (PFHxS)	4.55 ng/mL
							Perfluorononanoic acid (PFNA)	5 ng/mL
							Perfluorooctanoic acid (PFOA)	5 ng/mL
							Perfluorooctadecanoic acid	5 ng/mL
							Perfluorooctanesulfonic acid (PFOS)	4.64 ng/mL
							Perfluorooctane Sulfonamide (FOSA)	5 ng/mL
							Perfluoropentanoic acid (PFPeA)	5 ng/mL

Lab	Name:	TestAmerica	Sacramento	Job No.: 320-29732-1

				Reagent	Parent Reager	nt		
Reagent ID	Exp Date	Prep Date	Dilutant Used	Final Volume	Reagent ID	Volume Added	Analyte	Concentration
							Perfluorotetradecanoic acid (PFTeA)	5 ng/mL
							Perfluorotridecanoic Acid (PFTriA)	5 ng/mL
							Perfluoroundecanoic acid (PFUnA)	5 ng/mL
					LCPFCIS_00003		13C2-PFOA	50 ng/mL
.LCMPFC_ALL_SU_00001	12/29/17	06/29/17	Methanol, Lot Baker 141039	10000 uL	LCd-NEtFOSA-M_00005	200 uL	d-N-EtFOSA-M	1 ug/mL
					LCd-NMeFOSA-M_00004		d-N-MeFOSA-M	1 ug/mL
					LCd3-NMeFOSAA_00004	200 uL	d3-NMeFOSAA	1 ug/mL
					LCd5-NEtFOSAA_00004		d5-NEtFOSAA	1 ug/mL
					LCM2-6:FTS_00004		M2-6:2FTS	0.95 ug/mL
					LCM2-8:2FTS_00004		M2-8:2FTS	0.958 ug/mL
					LCM2PFHxDA_00010		13C2-PFHxDA	1 ug/mL
					LCM2PFTeDA_00009	200 uL	13C2-PFTeDA	1 ug/mL
					LCM4PFHPA_00009	200 uL	13C4-PFHpA	1 ug/mL
					LCM5PFPEA 00010		13C5 PFPeA	1 ug/mL
					LCM8FOSA 00013	200 uL	13C8 FOSA	1 ug/mL
					LCMPFBA 00010	200 uL	13C4 PFBA	1 ug/mL
					LCMPFDA 00015	200 uL	13C2 PFDA	1 ug/mL
					LCMPFDoA 00010	200 uL	13C2 PFDoA	1 ug/mL
					LCMPFHxA 00016	200 uL	13C2 PFHxA	1 ug/mL
					LCMPFHxS 00010	200 uL	1802 PFHxS	0.946 ug/mL
					LCMPFNA 00010	200 uL	13C5 PFNA	1 ug/mL
					LCMPFOA 00014	200 uL	13C4 PFOA	1 ug/mL
					LCMPFOS 00022	200 uL	13C4 PFOS	0.956 ug/mL
					LCMPFUdA 00011		13C2 PFUnA	1 ug/mL
LCd-NEtFOSA-M 00005	06/10/21	WE	LLINGTON, Lot dNEtFOSA06	16M	(Purchased Reag	ent)	d-N-EtFOSA-M	50 ug/mL
LCd-NMeFOSA-M 00004	06/10/21		LLINGTON, Lot dNMeFOSA06	16M	(Purchased Reag	ent)	d-N-MeFOSA-M	50 ug/mL
LCd3-NMeFOSAA 00004	11/22/21	WE	LLINGTON, Lot d3NMeFOSAA	L116	(Purchased Reag	ent)	d3-NMeFOSAA	50 ug/mL
LCd5-NEtFOSAA 00004	11/22/21		LLINGTON, Lot d5NEtFOSAA	L116	(Purchased Reag	ent)	d5-NEtFOSAA	50 ug/mL
LCM2-6:FTS 00004	02/17/22	W	ELLINGTON, Lot M262FTS02	17	(Purchased Reag	ent)	M2-6:2FTS	47.5 ug/mL
LCM2-8:2FTS 00004	08/22/21	W	ELLINGTON, Lot M282FTS08	16	(Purchased Reag	ent)	M2-8:2FTS	47.9 ug/mL
LCM2PFHxDA 00010	01/07/21	Wellingt	on Laboratories, Lot M2P	FHxDA1112	(Purchased Reag	ent)	13C2-PFHxDA	50 ug/mL
LCM2PFTeDA 00009	12/07/20	Wellingt	on Laboratories, Lot M2P	FTeDA0217	(Purchased Reag		13C2-PFTeDA	50 ug/mL
LCM4PFHPA 00009	05/27/21		ton Laboratories, Lot M41		(Purchased Reag		13C4-PFHpA	50 ug/mL
LCM5PFPEA 00010	11/22/21		ton Laboratories, Lot M51		(Purchased Reag	ent)	13C5 PFPeA	50 ug/mL
LCM8FOSA 00013	12/22/20		ton Laboratories, Lot M81		(Purchased Reag	ent)	13C8 FOSA	50 ug/mL
LCMPFBA 00010	05/24/21		gton Laboratories, Lot Mi		(Purchased Reag		13C4 PFBA	50 ug/mL
LCMPFDA 00015	09/30/21		gton Laboratories, Lot MI		(Purchased Reag		13C2 PFDA	50 ug/mL
LCMPFDoA 00010	04/08/21		ton Laboratories, Lot MP		(Purchased Reag		13C2 PFDoA	50 ug/mL
LCMPFHxA 00016	11/22/21		ton Laboratories, Lot MP		(Purchased Reag		13C2 PFHxA	50 ug/mL
LCMPFHxS 00010	02/17/22		ton Laboratories, Lot MP		(Purchased Reag		1802 PFHxS	47.3 ug/mL
LCMPFNA 00010	09/30/21		gton Laboratories, Lot Mi		(Purchased Reag		13C5 PFNA	50 ug/mL
LCMPFOA 00014	04/12/22		gton Laboratories, Lot MI		(Purchased Reag		13C4 PFOA	50 ug/mL
LCMPFOS 00022	12/12/21		gton Laboratories, Lot M		(Purchased Reag		13C4 PFOS	47.8 ug/mL
LCMPFUdA 00011	11/22/21		ton Laboratories, Lot MP		(Purchased Reag		13C2 PFUnA	50 ug/mL

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				Reagent	Parent Read	gent		
Reagent ID	-	rep	Dilutant Used	Final Volume	Reagent ID	Volume Added	Analyte	Concentration
.LCPFC_ALL_SP_00001	12/27/17 07/0	7/17	Methanol, Lot 157237	10000 uL	LCPFC2SP_00037	1000 uL	Sodium 1H,1H,2H,2H-perfluorohexane sulfonate (4:2)	0.0934 ug/mI
							Sodium 1H,1H,2H,2H-perfluorooctane sulfonate (6:2)	0.0948 ug/ml
							Sodium 1H,1H,2H,2H-perfluorodecane sulfonate (8:2)	0.0958 ug/mI
							N-ethylperfluoro-1-octanesulfo namide	0.1 ug/mI
							N-ethyl perfluorooctane sulfonamidoacetic acid	0.1 ug/mI
							MeFOSA	0.1 ug/mI
							N-methyl perfluorooctane sulfonamidoacetic acid	0.1 ug/ml
					LCPFCSP 00103	1000 uL	Perfluorobutanoic acid (PFBA)	0.1 ug/mI
					_		Perfluorobutanesulfonic acid (PFBS)	0.0884 ug/ml
							Perfluorodecanoic acid (PFDA)	0.1 ug/mI
							Perfluorododecanoic acid (PFDoA)	0.1 ug/ml
							Perfluorodecanesulfonic acid (PFDS)	0.0964 ug/ml
							Perfluoroheptanoic acid (PFHpA)	0.1 ug/mI
							Perfluoroheptanesulfonic Acid (PFHpS)	0.0952 ug/mI
							Perfluorohexanoic acid (PFHxA)	0.1 ug/ml
							Perfluorohexadecanoic acid	0.1 ug/mI
							Perfluorohexanesulfonic acid (PFHxS)	0.091 ug/mI
							Perfluorononanoic acid (PFNA)	0.1 ug/mI
							Perfluorooctanoic acid (PFOA)	0.1 ug/mI
							Perfluorooctadecanoic acid	0.1 ug/mI
							Perfluorooctanesulfonic acid (PFOS)	0.0928 ug/mI
							Perfluorooctane Sulfonamide (FOSA)	0.1 ug/mI
							Perfluoropentanoic acid (PFPeA)	0.1 ug/mI
							Perfluorotetradecanoic acid (PFTeA)	0.1 ug/ml
							Perfluorotridecanoic Acid (PFTriA)	0.1 ug/mI
							Perfluoroundecanoic acid (PFUnA)	0.1 ug/mI
LCPFC2SP_00037	01/07/18 07/0	7/17	Methanol, Lot 104453	10 mL	LC4:2FTS_00002	200 uL	Sodium 1H,1H,2H,2H-perfluorohexane sulfonate (4:2)	0.934 ug/ml

Lab	Name: TestAmerica	Sacramento	Job No.: 320-29732-1

				Reagent	Parent Reage:	nt		
Reagent ID	Exp Date	Prep Date	Dilutant Used	Final Volume	Reagent ID	Volume Added	Analyte	Concentration
					LC6:2FTS_00003	200 uL	Sodium 1H,1H,2H,2H-perfluorooctane sulfonate (6:2)	0.948 ug/mL
					LC8:2FTS_00003		Sodium 1H,1H,2H,2H-perfluorodecane sulfonate (8:2)	0.958 ug/mL
					LCN-EtFOSA-M_00004	200 uL	N-ethylperfluoro-1-octanesulfo namide	1 ug/mL
					LCN-EtFOSAA_00002	200 uL	N-ethyl perfluorooctane sulfonamidoacetic acid	1 ug/mL
					LCN-MeFOSA-M 00003	200 uL	MeFOSA	1 ug/mL
					LCN-MeFOSAA_00003	200 uL	N-methyl perfluorooctane sulfonamidoacetic acid	1 ug/mL
LC4:2FTS_00002	12/12/21		WELLINGTON, Lot 42FTS121		(Purchased Reag		Sodium 1H,1H,2H,2H-perfluorohexane sulfonate (4:2)	46.7 ug/mL
LC6:2FTS_00003	06/25/21		WELLINGTON, Lot 62FTS061	6	(Purchased Read		Sodium 1H,1H,2H,2H-perfluorooctane sulfonate (6:2)	47.4 ug/mL
LC8:2FTS_00003	08/22/21		WELLINGTON, Lot 82FTS081	6	(Purchased Read	gent)	Sodium 1H,1H,2H,2H-perfluorodecane sulfonate (8:2)	47.9 ug/mL
LCN-EtFOSA-M_00004	05/24/21	WI	ELLINGTON, Lot NETFOSA051	6M	(Purchased Reac	gent)	N-ethylperfluoro-1-octanesulfo namide	50 ug/mL
LCN-EtFOSAA_00002	01/20/21	M	ELLINGTON, Lot NETFOSAA01	16	(Purchased Read	gent)	N-ethyl perfluorooctane sulfonamidoacetic acid	50 ug/mL
LCN-MeFOSA-M 00003	05/24/21	WI	ELLINGTON, Lot NMeFOSA051	-6M	(Purchased Read	gent)	MeFOSA	50 ug/mL
LCN-MeFOSAA_00003	01/20/21		ELLINGTON, Lot NMeFOSAA01		(Purchased Read		N-methyl perfluorooctane sulfonamidoacetic acid	50 ug/mL
LCPFCSP_00103	12/27/17	06/27/17	Methanol, Lot 090285	10000 uI	LCPFBA_00006	200 uL	Perfluorobutanoic acid (PFBA)	1 ug/mI
					LCPFBS_00006		Perfluorobutanesulfonic acid (PFBS)	0.884 ug/mL
					LCPFDA_00006	200 uL	Perfluorodecanoic acid (PFDA)	1 ug/mL
					LCPFDoA_00006		Perfluorododecanoic acid (PFDoA)	1 ug/mL
					LCPFDS_00005		Perfluorodecanesulfonic acid (PFDS)	0.964 ug/mL
					LCPFHpA_00006		Perfluoroheptanoic acid (PFHpA)	1 ug/mL
					LCPFHpS_00010		Perfluoroheptanesulfonic Acid (PFHpS)	0.952 ug/mL
					LCPFHxA_00005		Perfluorohexanoic acid (PFHxA)	1 ug/mL
				1	LCPFHxDA_00007		Perfluorohexadecanoic acid	1 ug/mL
					LCPFHxS-br_00003		Perfluorohexanesulfonic acid (PFHxS)	0.91 ug/mL
				1	LCPFNA_00007		Perfluorononanoic acid (PFNA)	1 ug/mL
				1	LCPFOA 00007	200 uL	Perfluorooctanoic acid (PFOA)	1 ug/mL
				1	LCPFODA_00007		Perfluorooctadecanoic acid	1 ug/mL
					LCPFOS-br_00003	200 uL	Perfluorooctanesulfonic acid (PFOS)	0.928 ug/mL

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				Reagent	Parent Read	gent		
	Exp	Prep	Dilutant	Final		Volume		
Reagent ID	Date	Date	Used	Volume	Reagent ID	Added	Analyte	Concentration
					LCPFOSA_00010		Perfluorooctane Sulfonamide (FOSA)	1 ug/mL
					LCPFPeA_00006		Perfluoropentanoic acid (PFPeA)	1 ug/mL
					LCPFTeDA_00005		Perfluorotetradecanoic acid (PFTeA)	1 ug/mL
					LCPFTrDA_00005		Perfluorotridecanoic Acid (PFTriA)	1 ug/mL
					LCPFUdA_00006		Perfluoroundecanoic acid (PFUnA)	1 ug/mL
LCPFBA 00006	05/27/21	Wellin	gton Laboratories, Lot P	FBA0516	(Purchased Re	agent)	Perfluorobutanoic acid (PFBA)	50 ug/mL
LCPFBS_00006	03/15/21	_	ton Laboratories, Lot L		(Purchased Re		Perfluorobutanesulfonic acid (PFBS)	44.2 ug/mL
LCPFDA 00006	05/31/21	Wellin	gton Laboratories, Lot P	FDA0516	(Purchased Re	agent)	Perfluorodecanoic acid (PFDA)	50 ug/mL
LCPFDoA_00006	05/31/21	Welling	ton Laboratories, Lot Pl	FDoA0516	(Purchased Re		Perfluorododecanoic acid (PFDoA)	50 ug/mL
LCPFDS_00005	07/02/20	_	ton Laboratories, Lot L		(Purchased Re		Perfluorodecanesulfonic acid (PFDS)	48.2 ug/mL
LCPFHpA_00006	01/22/21	_	ton Laboratories, Lot Pl	=	(Purchased Re	_	Perfluoroheptanoic acid (PFHpA)	50 ug/mL
LCPFHps_00010	11/06/20	_	ton Laboratories, Lot LP	_	(Purchased Re	agent)	Perfluoroheptanesulfonic Acid (PFHpS)	47.6 ug/mL
LCPFHxA 00005	12/22/20	Welling	ton Laboratories, Lot Pl	FHxA1215	(Purchased Re	agent)	Perfluorohexanoic acid (PFHxA)	50 ug/mL
LCPFHxDA 00007	05/25/21	Welling	ton Laboratories, Lot PF	HxDA0516	(Purchased Re	agent)	Perfluorohexadecanoic acid	50 ug/mL
LCPFHxS-br_00003	07/03/20		on Laboratories, Lot brP		(Purchased Re	agent)	Perfluorohexanesulfonic acid (PFHxS)	45.5 ug/mL
LCPFNA 00007	10/23/20	Wellin	gton Laboratories, Lot P	FNA1015	(Purchased Re	agent)	Perfluorononanoic acid (PFNA)	50 ug/mL
LCPFOA 00007	08/02/21	Wellin	gton Laboratories, Lot P	FOA0716	(Purchased Re	agent)	Perfluorooctanoic acid (PFOA)	50 ug/mL
LCPFODA 00007	04/29/21		ton Laboratories, Lot Pl		(Purchased Re		Perfluorooctadecanoic acid	50 ug/mL
LCPFOS-br_00003	10/14/20		on Laboratories, Lot br		(Purchased Re		Perfluorooctanesulfonic acid (PFOS)	46.4 ug/mL
LCPFOSA_00010	09/30/21	_	ton Laboratories, Lot F		(Purchased Re	agent)	Perfluorooctane Sulfonamide (FOSA)	50 ug/mL
LCPFPeA_00006	05/31/21	_	ton Laboratories, Lot Pl		(Purchased Re		Perfluoropentanoic acid (PFPeA)	50 ug/mL
LCPFTeDA_00005	12/09/20	_	ton Laboratories, Lot PF		(Purchased Re	-	Perfluorotetradecanoic acid (PFTeA)	50 ug/mL
LCPFTrDA_00005	02/12/21	_	ton Laboratories, Lot PF		(Purchased Re	-	Perfluorotridecanoic Acid (PFTriA)	50 ug/mL
LCPFUdA_00006	08/19/20	_	ton Laboratories, Lot Pl		(Purchased Re	-	Perfluoroundecanoic acid (PFUnA)	50 ug/mL
.LCPFCIS_00003	12/30/17	06/30/17	Methanol, Lot 14139		LCM2PFOA_00005		13C2-PFOA	5 ug/mL
LCM2PFOA_00005	06/19/18	Welling	ton Laboratories, Lot M2	PFOA0613	(Purchased Re	agent)	13C2-PFOA	50 ug/mL
LCPFC_FULL-L4_00005	09/02/17	05/30/17	MeOH/H2O, Lot 090285	5000 117.	LCMPFCSU 00069	250 HT.	13C8 FOSA	50 ng/mL
	03/02/1/	55,50,17	110011/1120, 100 000200	5555 41		250 411	13C2 PFDoA	50 ng/mL
					LCPFCSP_00096	100 uL	Perfluorooctane Sulfonamide (FOSA)	20 ng/mL
							Perfluorotetradecanoic acid (PFTeA)	20 ng/mL

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				Reagent	Parent Reager	nt		
Reagent ID	Exp Date	Prep Date	Dilutant Used	Final Volume	Reagent ID	Volume Added	Analyte	Concentration
.LCMPFCSU_00069	11/24/17	05/24/17	Methanol, Lot Baker 141039	10000 uL	LCM8FOSA_00012		13C8 FOSA	1 ug/mL
					LCMPFDoA_00009		13C2 PFDoA	1 ug/mL
LCM8FOSA_00012			on Laboratories, Lot M8F		(Purchased Reag		13C8 FOSA	50 ug/mL
LCMPFDoA_00009	04/08/21		ton Laboratories, Lot MP	FDoA0416	(Purchased Reag		13C2 PFDoA	50 ug/mL
.LCPFCSP_00096	09/02/17	05/24/17	Methanol, Lot 090285	10000 uL	LCPFOSA_00009		Perfluorooctane Sulfonamide (FOSA)	1 ug/mL
	00/00/15				LCPFTeDA_00005		Perfluorotetradecanoic acid (PFTeA)	1 ug/mL
LCPFOSA_00009	09/02/17		ton Laboratories, Lot FC		(Purchased Reag		Perfluorooctane Sulfonamide (FOSA)	50 ug/mL
LCPFTeDA_00005	12/09/20		ton Laboratories, Lot PF'	TeDA1215	(Purchased Reag	ent)	Perfluorotetradecanoic acid (PFTeA)	50 ug/mL
LCPFC FULL-L4 00008	12/27/17	07/07/17	MeOH/H2O, Lot 090285	5000 uL	LCMPFC ALL SU 00001	250 uL	d-N-EtFOSA-M	50 ng/mL
							d-N-MeFOSA-M	50 ng/mL
							d3-NMeFOSAA	50 ng/mL
							d5-NEtFOSAA	50 ng/mL
							M2-6:2FTS	47.5 ng/mL
							M2-8:2FTS	47.9 ng/mL
							13C2-PFHxDA	50 ng/mL
							13C2-PFTeDA	50 ng/mL
							13C4-PFHpA	50 ng/mL
							13C5 PFPeA	50 ng/mL
							13C8 FOSA	50 ng/mL
							13C4 PFBA	50 ng/mL
							13C4 FFBA	50 ng/mL
							13C2 PFDA	50 ng/mL
								50 ng/mL
							13C2 PFHxA	50 ng/mL
							1802 PFHxS	47.3 ng/mL
							13C5 PFNA	50 ng/mL
							13C4 PFOA	50 ng/mL
							13C4 PFOS	47.8 ng/mL
							13C2 PFUnA	50 ng/mL
					LCPFC2SP_00037	100 uL	Sodium	18.68 ng/mL
							1H,1H,2H,2H-perfluorohexane sulfonate (4:2)	
							Sodium 1H,1H,2H,2H-perfluorooctane sulfonate (6:2)	18.96 ng/mL
							Sodium 1H,1H,2H,2H-perfluorodecane	19.16 ng/mL
							<pre>sulfonate (8:2) N-ethylperfluoro-1-octanesulfo namide</pre>	20 ng/mL
							N-ethyl perfluorooctane sulfonamidoacetic acid	20 ng/mL
							MeFOSA	20 ng/mL
							N-methyl perfluorooctane sulfonamidoacetic acid	20 ng/mL

Lab	Name: TestAmerica	Sacramento	Job No.: 320-29732-1

				Reagent	Parent Reagen	t		
	Exp	Prep	Dilutant	Final		Volume		
Reagent ID	Date	Date	Used	Volume	Reagent ID	Added	Analyte	Concentration
			3333		LCPFCIS 00003		13C2-PFOA	50 ng/mL
					LCPFCSP 00103		Perfluorobutanoic acid (PFBA)	20 ng/mL
					LCPFCSP_00103	100 uL	Perfluorobutanesulfonic acid	
							(PFBS)	17.68 ng/mL
							Perfluorodecanoic acid (PFDA)	20 ng/mL
							Perfluorododecanoic acid (PFDoA)	20 ng/mL
							Perfluorodecanesulfonic acid (PFDS)	19.28 ng/mL
							Perfluoroheptanoic acid (PFHpA)	20 ng/mL
							Perfluoroheptanesulfonic Acid (PFHpS)	19.04 ng/mL
							Perfluorohexanoic acid (PFHxA)	20 ng/mL
							Perfluorohexadecanoic acid	20 ng/mL
							Perfluorohexanesulfonic acid (PFHxS)	18.2 ng/mL
							Perfluorononanoic acid (PFNA)	20 ng/mL
							Perfluorooctanoic acid (PFOA)	20 ng/mL
							Perfluorooctadecanoic acid	20 ng/mL
							Perfluorooctanesulfonic acid (PFOS)	18.56 ng/mL
							Perfluorooctane Sulfonamide (FOSA)	20 ng/mL
							Perfluoropentanoic acid (PFPeA)	20 ng/mL
							Perfluorotetradecanoic acid (PFTeA)	20 ng/mL
							Perfluorotridecanoic Acid (PFTriA)	20 ng/mL
							Perfluoroundecanoic acid (PFUnA)	20 ng/mL
.LCMPFC_ALL_SU_00001	12/29/17	06/29/17	Methanol, Lot Baker 141039	10000 uL	LCd-NEtFOSA-M_00005	200 uL	d-N-EtFOSA-M	1 ug/mL
					LCd-NMeFOSA-M 00004	200 uL	d-N-MeFOSA-M	1 ug/mL
					LCd3-NMeFOSAA 00004	200 uL	d3-NMeFOSAA	1 ug/mL
					LCd5-NEtFOSAA 00004	200 uL	d5-NEtFOSAA	1 ug/mL
					LCM2-6:FTS 00004	200 uL	M2-6:2FTS	0.95 ug/mL
					LCM2-8:2FTS 00004		M2-8:2FTS	0.958 ug/mL
					LCM2PFHxDA 00010	200 uL	13C2-PFHxDA	1 ug/mL
					LCM2PFTeDA 00009		13C2-PFTeDA	1 ug/mL
					LCM4PFHPA 00009	200 uL	13C4-PFHpA	1 ug/mL
					LCM5PFPEA_00010		13C5 PFPeA	1 ug/mL
					LCM8FOSA_00013	200 uL	13C8 FOSA	1 ug/mL
					LCMPFBA 00010		13C4 PFBA	1 ug/mL
					LCMPFDA 00015	200 uL	13C2 PFDA	1 ug/mL
					LCMPFDoA 00010		13C2 PFDoA	1 ug/mL
					LCMPFHxA 00016	200 uL	13C2 PFHxA	1 ug/mL
					LCMPFHxS_00010	200 uL	1802 PFHxS	0.946 ug/mL

Lab Name: TestAmerica Sacramento Job No.: 320-29732-1	
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			Dilutant Fi	Reagent	Parent Reage	nt		
Reagent ID	Exp Date	Prep Date		Final Volume	Reagent ID	Volume Added	Analyte	Concentration
					LCMPFNA 00010	200 uL	13C5 PFNA	1 ug/mL
					LCMPFOA 00014	200 uL	13C4 PFOA	1 ug/mL
					LCMPFOS 00022	200 uL	13C4 PFOS	0.956 ug/mL
					LCMPFUdA 00011		13C2 PFUnA	1 ug/mL
LCd-NEtFOSA-M 00005	06/10/21	WE	LLINGTON, Lot dNEtFOSAO	616M	(Purchased Reag	gent)	d-N-EtFOSA-M	50 ug/mL
LCd-NMeFOSA-M 00004	06/10/21	WE	LLINGTON, Lot dNMeFOSA0	616M	(Purchased Reag	gent)	d-N-MeFOSA-M	50 ug/mL
LCd3-NMeFOSAA 00004	11/22/21	WEI	LINGTON, Lot d3NMeFOSAA	A1116	(Purchased Reag		d3-NMeFOSAA	50 ug/mL
LCd5-NEtFOSAA 00004	11/22/21		LLINGTON, Lot d5NEtFOSAA		(Purchased Read		d5-NEtFOSAA	50 ug/mL
LCM2-6:FTS 00004	02/17/22	W	ELLINGTON, Lot M262FTS0	217	(Purchased Read		M2-6:2FTS	47.5 ug/mL
LCM2-8:2FTS 00004	08/22/21		ELLINGTON, Lot M282FTS0		(Purchased Read	rent)	M2-8:2FTS	47.9 ug/mL
LCM2PFHxDA 00010	01/07/21		on Laboratories, Lot M2		(Purchased Read		13C2-PFHxDA	50 ug/mL
LCM2PFTeDA 00009	12/07/20		on Laboratories, Lot M2		(Purchased Read		13C2-PFTeDA	50 ug/mL
LCM4PFHPA 00009	05/27/21		ton Laboratories, Lot M4		(Purchased Reag		13C4-PFHpA	50 ug/mL
LCM5PFPEA 00010	11/22/21		ton Laboratories, Lot M5		(Purchased Reag	rent.)	13C5 PFPeA	50 ug/mL
LCM8FOSA 00013	12/22/20		ton Laboratories, Lot M8	REOSA1215T	(Purchased Read		13C8 FOSA	50 ug/mL
LCMPFBA 00010	05/24/21		gton Laboratories, Lot M		(Purchased Read		13C4 PFBA	50 ug/mL
LCMPFDA 00015	09/30/21		ton Laboratories, Lot M		(Purchased Read		13C2 PFDA	50 ug/mL
LCMPFDoA 00010	04/08/21		ton Laboratories, Lot M		(Purchased Reag		13C2 PFDoA	50 ug/mL
LCMPFHxA 00016	11/22/21		ton Laboratories, Lot M		(Purchased Read		13C2 PFHxA	50 ug/mL
LCMPFHxS 00010	02/17/22		ton Laboratories, Lot M		(Purchased Reag		1802 PFHXS	47.3 ug/mL
LCMFFHXS_00010	09/30/21		gton Laboratories, Lot M		(Purchased Read		13C5 PFNA	50 ug/mL
LCMPFOA 00014	04/12/22		gton Laboratories, Lot M		(Purchased Read		13C4 PFOA	50 ug/mL
LCMPFOA_00014	12/12/21	Welling	gton Laboratories, Lot M	MPFOAU417	(Purchased Read	, ,	13C4 PFOS	47.8 ug/mL
LCMPFUS_00022	11/22/21	Welling	ton Laboratories, Lot M	MPFUSIZIO	(Purchased Read		13C4 PFUS	50 ug/mL
.LCMFF0dA_00011 .LCPFC2SP_00037			Methanol, Lot 104453		LC4:2FTS 00002		Sodium	0.934 ug/mL
LCPFC2SP_00037	01/0//18	07/07/17	methanol, Lot 104453	10 MI	_		1H,1H,2H,2H-perfluorohexane sulfonate (4:2)	
					LC6:2FTS_00003	200 uL	Sodium 1H,1H,2H,2H-perfluorooctane sulfonate (6:2)	0.948 ug/mL
					LC8:2FTS_00003	200 uL	Sodium 1H,1H,2H,2H-perfluorodecane sulfonate (8:2)	0.958 ug/mL
					LCN-EtFOSA-M_00004		N-ethylperfluoro-1-octanesulfo namide	
					LCN-EtFOSAA_00002		N-ethyl perfluorooctane sulfonamidoacetic acid	1 ug/mL
					LCN-MeFOSA-M_00003		MeFOSA	1 ug/mL
					LCN-MeFOSAA_00003		N-methyl perfluorooctane sulfonamidoacetic acid	1 ug/mL
LC4:2FTS_00002	12/12/21		WELLINGTON, Lot 42FTS12		(Purchased Reag		Sodium 1H,1H,2H,2H-perfluorohexane sulfonate (4:2)	46.7 ug/mL
LC6:2FTS_00003	06/25/21		WELLINGTON, Lot 62FTS06		(Purchased Reag		Sodium 1H,1H,2H,2H-perfluorooctane sulfonate (6:2)	47.4 ug/mL
LC8:2FTS_00003	08/22/21		WELLINGTON, Lot 82FTS08	16	(Purchased Reag	gent)	Sodium 1H,1H,2H,2H-perfluorodecane sulfonate (8:2)	47.9 ug/mL

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				Desgent	Parent Reage	ent		
	Erm	Dwan	Dilutant	Reagent Final		Volume		
Reagent ID	Exp Date	Prep Date	Used	Volume	Reagent ID	Added	Analyte	Concentration
							-	
LCN-EtFOSA-M_00004	05/24/21	,			(Purchased Rea	igent)	N-ethylperfluoro-1-octanesulfo namide	50 ug/mL
LCN-EtFOSAA_00002	01/20/21	WE	LLINGTON, Lot NETFOSAA01	(Purchased Rea	igent)	N-ethyl perfluorooctane	50 ug/mL	
							sulfonamidoacetic acid	
LCN-MeFOSA-M_00003	05/24/21		LLINGTON, Lot NMeFOSA05		(Purchased Rea		MeFOSA	50 ug/mL
LCN-MeFOSAA_00003	01/20/21	,			(Purchased Rea		N-methyl perfluorooctane sulfonamidoacetic acid	50 ug/mL
.LCPFCIS_00003	12/30/17		Methanol, Lot 14139		LCM2PFOA_00005		13C2-PFOA	5 ug/mL
LCM2PFOA_00005	06/19/18		ton Laboratories, Lot M2		(Purchased Rea	igent)	13C2-PFOA	50 ug/mL
.LCPFCSP_00103	12/27/17	06/27/17	Methanol, Lot 090285	10000 uL	LCPFBA_00006		Perfluorobutanoic acid (PFBA)	1 ug/mL
					LCPFBS_00006	200 uL	Perfluorobutanesulfonic acid (PFBS)	0.884 ug/mL
					LCPFDA 00006	200 uL	Perfluorodecanoic acid (PFDA)	1 ug/mL
					LCPFDoA 00006	200 uL	Perfluorododecanoic acid	1 ug/mL
					_		(PFDoA)	
					LCPFDS_00005	200 uL	Perfluorodecanesulfonic acid (PFDS)	0.964 ug/mL
					LCPFHpA 00006	200 uL	Perfluoroheptanoic acid	1 ug/mL
					_		(PFHpA)	
					LCPFHpS_00010	200 uL	Perfluoroheptanesulfonic Acid	0.952 ug/mL
							(PFHpS)	
					LCPFHxA_00005		Perfluorohexanoic acid (PFHxA)	1 ug/mL
					LCPFHxDA_00007		Perfluorohexadecanoic acid	1 ug/mL
					LCPFHxS-br_00003	200 uL	Perfluorohexanesulfonic acid (PFHxS)	0.91 ug/mL
					LCPFNA_00007	200 uL	Perfluorononanoic acid (PFNA)	1 ug/mL
					LCPFOA 00007	200 uL	Perfluorooctanoic acid (PFOA)	1 ug/mL
					LCPFODA 00007	200 uL	Perfluorooctadecanoic acid	1 ug/mL
					LCPFOS-br_00003		Perfluorooctanesulfonic acid (PFOS)	0.928 ug/mL
					LCPFOSA_00010	200 uL	Perfluorooctane Sulfonamide (FOSA)	1 ug/mL
					LCPFPeA_00006	200 uL	Perfluoropentanoic acid (PFPeA)	1 ug/mL
					LCPFTeDA_00005	200 uL	Perfluorotetradecanoic acid (PFTeA)	1 ug/mL
					LCPFTrDA_00005	200 uL	Perfluorotridecanoic Acid (PFTriA)	1 ug/mL
					LCPFUdA_00006	200 uL	Perfluoroundecanoic acid (PFUnA)	1 ug/mL
LCPFBA 00006	05/27/21	Welling	gton Laboratories, Lot P	FBA0516	(Purchased Rea	igent)	Perfluorobutanoic acid (PFBA)	50 ug/mL
LCPFBS_00006	03/15/21		ton Laboratories, Lot L		(Purchased Rea	,	Perfluorobutanesulfonic acid (PFBS)	44.2 ug/mL
LCPFDA 00006	05/31/21	Wellin	gton Laboratories, Lot P	FDA0516	(Purchased Rea	igent.)	Perfluorodecanoic acid (PFDA)	50 ug/mL
LCPFDoA 00006	05/31/21		ton Laboratories, Lot Pl		(Purchased Rea	-	Perfluorododecanoic acid	50 ug/mL
_		_			·		(PFDoA) Perfluorodecanesulfonic acid	
LCPFDS_00005	07/02/20		ton Laboratories, Lot Ll		(Purchased Rea		(PFDS)	48.2 ug/mL
LCPFHpA_00006	01/22/21	Welling	ton Laboratories, Lot Pl	FHpA0116	(Purchased Rea	igent)	Perfluoroheptanoic acid (PFHpA)	50 ug/mL

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				Reagent	Parent Reage	ent		
	Exp	Prep	Dilutant	Final		Volume		
Reagent ID	Date	Date	Used	Volume	Reagent ID	Added	Analyte	Concentration
LCPFHpS_00010	11/06/20	_	ton Laboratories, Lot	-	(Purchased Read	-	Perfluoroheptanesulfonic Acid (PFHpS)	47.6 ug/mI
LCPFHxA 00005	12/22/20	Welling	gton Laboratories, Lot	PFHxA1215	(Purchased Rea	gent)	Perfluorohexanoic acid (PFHxA)	50 ug/mI
LCPFHxDA 00007	05/25/21	Welling	ton Laboratories, Lot	PFHxDA0516	(Purchased Rea		Perfluorohexadecanoic acid	50 ug/mL
LCPFHxS-br_00003	07/03/20	_	on Laboratories, Lot b		(Purchased Rea	-	Perfluorohexanesulfonic acid (PFHxS)	45.5 ug/mL
LCPFNA_00007	10/23/20		gton Laboratories, Lot		(Purchased Rea		Perfluorononanoic acid (PFNA)	50 ug/mL
LCPFOA_00007	08/02/21		gton Laboratories, Lot		(Purchased Rea		Perfluorooctanoic acid (PFOA)	50 ug/mL
LCPFODA_00007	04/29/21	Welling	gton Laboratories, Lot	PFODA0416	(Purchased Rea		Perfluorooctadecanoic acid	50 ug/mL
LCPFOS-br_00003	10/14/20	_	ton Laboratories, Lot b		(Purchased Rea	· .	Perfluorooctanesulfonic acid (PFOS)	46.4 ug/mL
LCPFOSA_00010	09/30/21	, , , , , , , , , , , , , , , , , , ,				gent)	Perfluorooctane Sulfonamide (FOSA)	50 ug/mL
LCPFPeA_00006	05/31/21 Wellington Laboratories, Lot PFPeA0516				(Purchased Rea		Perfluoropentanoic acid (PFPeA)	50 ug/mL
LCPFTeDA_00005	12/09/20					gent)	Perfluorotetradecanoic acid (PFTeA)	50 ug/mL
LCPFTrDA_00005	02/12/21 Wellington Laboratories, Lot PFTrDA0216				(Purchased Rea	gent)	Perfluorotridecanoic Acid (PFTriA)	50 ug/mL
LCPFUdA_00006	08/19/20	Welling	gton Laboratories, Lot	PFUdA0815	(Purchased Rea	gent)	Perfluoroundecanoic acid (PFUnA)	50 ug/mL
LCPFC_FULL-L5_00005	09/02/17	05/30/17	MeOH/H2O, Lot 090285	5000 uL	LCMPFCSU 00069	250 uL	13C8 FOSA	50 ng/mL
					_		13C2 PFDoA	50 ng/mL
					LCPFCSP_00096	250 uL	Perfluorooctane Sulfonamide (FOSA)	50 ng/mL
							Perfluorotetradecanoic acid (PFTeA)	50 ng/mL
.LCMPFCSU_00069	11/24/17	05/24/17	Methanol, Lot Baker 141039	10000 uL	LCM8FOSA_00012		13C8 FOSA	1 ug/mL
					LCMPFDoA_00009		13C2 PFDoA	1 ug/mL
LCM8FOSA_00012	12/22/20		on Laboratories, Lot M		(Purchased Rea	J /	13C8 FOSA	50 ug/mL
LCMPFDoA_00009	04/08/21		ton Laboratories, Lot l	MPFDoA0416	(Purchased Rea		13C2 PFDoA	50 ug/mL
.LCPFCSP_00096	09/02/17	05/24/17	Methanol, Lot 090285	10000 uL	LCPFOSA_00009		Perfluorooctane Sulfonamide (FOSA)	1 ug/mL
					LCPFTeDA_00005		Perfluorotetradecanoic acid (PFTeA)	1 ug/mL
LCPFOSA_00009	09/02/17	=	gton Laboratories, Lot		(Purchased Rea	_	Perfluorooctane Sulfonamide (FOSA)	50 ug/mL
LCPFTeDA_00005	12/09/20	Welling	ton Laboratories, Lot	PFTeDA1215	(Purchased Rea	gent)	Perfluorotetradecanoic acid (PFTeA)	50 ug/mL
LCPFC FULL-L5 00008	12/27/17	07/07/17	MeOH/H2O, Lot 090285	5000 uL	LCMPFC ALL SU 00001	250 uL	d-N-EtFOSA-M	50 ng/mL
							d-N-MeFOSA-M	50 ng/mL
							d3-NMeFOSAA	50 ng/mL
							d5-NEtFOSAA	50 ng/mL
							M2-6:2FTS	47.5 ng/mL
							M2-8:2FTS	47.9 ng/mL
							13C2-PFHxDA	50 ng/mL
							13C2-PFTeDA	50 ng/mL
							13C4-PFHpA	50 ng/mL

Lab Name: TestAmerica Sacramento	Job No.: 320-29732-1
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				Reagent	Parent Reag	ent		
	Exp	Prep	Dilutant	Final		Volume		
Reagent ID	Date	Date	Used	Volume	Reagent ID	Added	Analyte	Concentration
							13C5 PFPeA	50 ng/mL
							13C8 FOSA	50 ng/mL
							13C4 PFBA	50 ng/mL
							13C2 PFDA	50 ng/mL
							13C2 PFDoA	50 ng/mL
							13C2 PFHxA	50 ng/mL
							1802 PFHxS	47.3 ng/mL
							13C5 PFNA	50 ng/mL
							13C4 PFOA	50 ng/mL
							13C4 PFOS	47.8 ng/mL
							13C2 PFUnA	50 ng/mL
					LCPFC2SP_00037	250 uL	Sodium	46.7 ng/mL
							1H,1H,2H,2H-perfluorohexane	
							sulfonate (4:2)	
							Sodium	47.4 ng/mL
							1H,1H,2H,2H-perfluorooctane sulfonate (6:2)	
							Sodium	47.9 ng/mL
							1H,1H,2H,2H-perfluorodecane	47.5 119/1111
							sulfonate (8:2)	
							N-ethylperfluoro-1-octanesulfo	50 ng/mL
							namide	
							N-ethyl perfluorooctane	50 ng/mL
							sulfonamidoacetic acid	
							MeFOSA	50 ng/mL
							N-methyl perfluorooctane sulfonamidoacetic acid	50 ng/mL
					LCPFCIS 00003	50 uT	13C2-PFOA	50 ng/mL
					LCPFCSP 00103		Perfluorobutanoic acid (PFBA)	50 ng/mL
					_		Perfluorobutanesulfonic acid	44.2 ng/mL
							(PFBS)]
							Perfluorodecanoic acid (PFDA)	50 ng/mL
							Perfluorododecanoic acid (PFDoA)	50 ng/mL
							Perfluorodecanesulfonic acid	48.2 ng/mL
							(PFDS)	F0 - / -
							Perfluoroheptanoic acid (PFHpA)	50 ng/mL
							Perfluoroheptanesulfonic Acid	47.6 ng/mL
							(PFHpS)	1,,0 119,1111
							Perfluorohexanoic acid (PFHxA)	50 ng/mL
							Perfluorohexadecanoic acid	50 ng/mL
							Perfluorohexanesulfonic acid (PFHxS)	45.5 ng/mL
							Perfluorononanoic acid (PFNA)	50 ng/mL
							Perfluorooctanoic acid (PFOA)	50 ng/mL
							Perfluorooctadecanoic acid	50 ng/mL
							Perfluorooctanesulfonic acid	46.4 ng/mL
							(PFOS)	10.1 119/1111

Lab	Name:	TestAmerica	Sacrament	o Job No.: 320-29732-1

				Reagent	Parent Reagent			
	Exp	Prep	Dilutant	Final		Volume		
Reagent ID	Date	Date	Used	Volume	Reagent ID	Added	Analyte	Concentration
							Perfluorooctane Sulfonamide (FOSA)	50 ng/mL
							Perfluoropentanoic acid (PFPeA)	50 ng/mL
							Perfluorotetradecanoic acid (PFTeA)	50 ng/mL
							Perfluorotridecanoic Acid (PFTriA)	50 ng/mL
							Perfluoroundecanoic acid (PFUnA)	50 ng/mL
.LCMPFC_ALL_SU_00001	12/29/17	06/29/17	Methanol, Lot Baker 141039	10000 uL	LCd-NEtFOSA-M_00005	200 uL	d-N-EtFOSA-M	1 ug/mL
					LCd-NMeFOSA-M 00004	200 uL	d-N-MeFOSA-M	1 ug/mL
					LCd3-NMeFOSAA 00004	200 uL	d3-NMeFOSAA	1 ug/mL
					LCd5-NEtFOSAA_00004	200 uL	d5-NEtFOSAA	1 ug/mL
					LCM2-6:FTS_00004		M2-6:2FTS	0.95 ug/mL
					LCM2-8:2FTS_00004	200 uL	M2-8:2FTS	0.958 ug/mL
					LCM2PFHxDA_00010		13C2-PFHxDA	1 ug/mL
					LCM2PFTeDA_00009	200 uL	13C2-PFTeDA	1 ug/mL
					LCM4PFHPA_00009	200 uL	13C4-PFHpA	1 ug/mL
					LCM5PFPEA 00010	200 uL	13C5 PFPeA	1 ug/mL
					LCM8FOSA 00013		13C8 FOSA	1 ug/mL
					LCMPFBA 00010	200 uL	13C4 PFBA	1 ug/mL
					LCMPFDA 00015	200 uL	13C2 PFDA	1 ug/mL
					LCMPFDoA 00010	200 uL	13C2 PFDoA	1 ug/mL
					LCMPFHxA 00016	200 uL	13C2 PFHxA	1 ug/mL
					LCMPFHxS 00010	200 uL	1802 PFHxS	0.946 ug/mL
					LCMPFNA 00010	200 uL	13C5 PFNA	1 ug/mL
					LCMPFOA 00014	200 uL	13C4 PFOA	1 ug/mL
					LCMPFOS 00022	200 uL	13C4 PFOS	0.956 ug/mL
					LCMPFUdA 00011	200 uL	13C2 PFUnA	1 ug/mL
LCd-NEtFOSA-M 00005	06/10/21	WE	LLINGTON, Lot dNEtFOSA06	16M	(Purchased Reag	rent)	d-N-EtFOSA-M	50 ug/mL
LCd-NMeFOSA-M 00004	06/10/21	WE	LLINGTON, Lot dNMeFOSA06	16M	(Purchased Reag	gent)	d-N-MeFOSA-M	50 ug/mL
LCd3-NMeFOSAA 00004	11/22/21	WEI	LLINGTON, Lot d3NMeFOSAA1	116	(Purchased Reag	gent)	d3-NMeFOSAA	50 ug/mL
LCd5-NEtFOSAA_00004	11/22/21	WEI	LLINGTON, Lot d5NEtFOSAA1	.116	(Purchased Reag	gent)	d5-NEtFOSAA	50 ug/mL
LCM2-6:FTS_00004	02/17/22	W	ELLINGTON, Lot M262FTS02	17	(Purchased Reag	gent)	M2-6:2FTS	47.5 ug/mL
LCM2-8:2FTS_00004	08/22/21		ELLINGTON, Lot M282FTS08		(Purchased Reag	gent)	M2-8:2FTS	47.9 ug/mL
LCM2PFHxDA_00010	01/07/21	Wellingt	on Laboratories, Lot M2P	FHxDA1112	(Purchased Reag	gent)	13C2-PFHxDA	50 ug/mL
LCM2PFTeDA_00009	12/07/20		on Laboratories, Lot M2P		(Purchased Reag	gent)	13C2-PFTeDA	50 ug/mL
LCM4PFHPA_00009	05/27/21	Wellingt	ton Laboratories, Lot M4F	FHpA0516	(Purchased Reag	gent)	13C4-PFHpA	50 ug/mL
LCM5PFPEA 00010	11/22/21	Wellingt	on Laboratories, Lot M5F	FPeA1116	(Purchased Reag	gent)	13C5 PFPeA	50 ug/mL
LCM8FOSA 00013	12/22/20	Wellingt	on Laboratories, Lot M8F	OSA1215I	(Purchased Reag	gent)	13C8 FOSA	50 ug/mL
LCMPFBA 00010	05/24/21	Welling	gton Laboratories, Lot MF	FBA0516	(Purchased Reag	gent)	13C4 PFBA	50 ug/mL
LCMPFDA 00015	09/30/21	Welling	gton Laboratories, Lot MF	FDA0916	(Purchased Reag	gent)	13C2 PFDA	50 ug/mL
LCMPFDoA 00010	04/08/21	Welling	ton Laboratories, Lot MP	FDoA0416	(Purchased Reag	gent)	13C2 PFDoA	50 ug/mL
LCMPFHxA 00016	11/22/21		ton Laboratories, Lot MP		(Purchased Reag		13C2 PFHxA	50 ug/mL
LCMPFHxS 00010	02/17/22	Welling	ton Laboratories, Lot MP	FHxS0217	(Purchased Reag	gent)	1802 PFHxS	47.3 ug/mL
LCMPFNA 00010	09/30/21		gton Laboratories, Lot MF		(Purchased Reag		13C5 PFNA	50 ug/mL
LCMPFOA 00014	04/12/22		gton Laboratories, Lot MF		(Purchased Read		13C4 PFOA	50 ug/mL

ab Name: TestAmerica Sacramento	Job No.: 320-29732-1
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				Peagent	Parent Reagent			
	Exp	Prep	Dilutant	Final		Volume		
Reagent ID	Date	Date	Used	Volume	Reagent ID	Added	Analyte	Concentration
LCMPFOS 00022	12/12/21				(Purchased Read		13C4 PFOS	
LCMPFUS_UUUZZ	11/22/21		ngton Laboratories, Lot MPFOS1216		(Purchased Read		13C4 PFUS 13C2 PFUnA	47.8 ug/mL 50 ug/mL
			Methanol, Lot 104453		,	,		
.LCPFC2SP_00037	01/0//18	07/07/17	Methanol, Lot 104453	10 mL	_		Sodium 1H,1H,2H,2H-perfluorohexane sulfonate (4:2)	0.934 ug/mL
					LC6:2FTS_00003	200 uL	Sodium 1H,1H,2H,2H-perfluorooctane sulfonate (6:2)	0.948 ug/mL
					LC8:2FTS_00003	200 uL	Sodium 1H,1H,2H,2H-perfluorodecane sulfonate (8:2)	0.958 ug/mL
					LCN-EtFOSA-M_00004		N-ethylperfluoro-1-octanesulfo namide	1 ug/mL
					LCN-EtFOSAA_00002		N-ethyl perfluorooctane sulfonamidoacetic acid	1 ug/mL
					LCN-MeFOSA-M_00003		MeFOSA	1 ug/mL
					LCN-MeFOSAA_00003	200 uL	N-methyl perfluorooctane sulfonamidoacetic acid	1 ug/mL
LC4:2FTS_00002	12/12/21	WELLINGTON, Lot 42FTS1216					Sodium 1H,1H,2H,2H-perfluorohexane sulfonate (4:2)	46.7 ug/mL
LC6:2FTS_00003	06/25/21	1	WELLINGTON, Lot 62FTS0	(Purchased Reagent)		Sodium 1H,1H,2H,2H-perfluorooctane sulfonate (6:2)	47.4 ug/mL	
LC8:2FTS_00003	08/22/21	1	WELLINGTON, Lot 82FTS0	(Purchased Reagent)		Sodium 1H,1H,2H,2H-perfluorodecane sulfonate (8:2)	47.9 ug/mL	
LCN-EtFOSA-M_00004	05/24/21	WE	ELLINGTON, Lot NETFOSA)516M	(Purchased Reagent)		N-ethylperfluoro-1-octanesulfo namide	50 ug/mL
LCN-EtFOSAA_00002	01/20/21	WE	ELLINGTON, Lot NETFOSA	A0116	(Purchased Reagent)		N-ethyl perfluorooctane sulfonamidoacetic acid	50 ug/mL
LCN-MeFOSA-M 00003	05/24/21	WE	LLINGTON, Lot NMeFOSA)516M	(Purchased Reagent)		MeFOSA	50 ug/mL
LCN-MeFOSAA_00003	01/20/21		LLINGTON, Lot NMeFOSA		(Purchased Reag	gent)	N-methyl perfluorooctane sulfonamidoacetic acid	50 ug/mL
.LCPFCIS_00003	12/30/17	06/30/17	Methanol, Lot 14139	5000 uL	LCM2PFOA_00005	500 uL	13C2-PFOA	5 ug/mL
LCM2PFOA_00005	06/19/18		ton Laboratories, Lot		(Purchased Reag		13C2-PFOA	50 ug/mL
.LCPFCSP_00103	12/27/17	06/27/17	Methanol, Lot 090285	10000 uL	LCPFBA_00006		Perfluorobutanoic acid (PFBA)	1 ug/mL
					LCPFBS_00006		Perfluorobutanesulfonic acid (PFBS)	0.884 ug/mL
					LCPFDA 00006	200 uL	Perfluorodecanoic acid (PFDA)	1 ug/mL
					LCPFDoA_00006	200 uL	Perfluorododecanoic acid (PFDoA)	1 ug/mL
					LCPFDS_00005		Perfluorodecanesulfonic acid (PFDS)	0.964 ug/mL
					LCPFHpA_00006		Perfluoroheptanoic acid (PFHpA)	1 ug/mL
					LCPFHpS_00010		Perfluoroheptanesulfonic Acid (PFHpS)	0.952 ug/mL
					LCPFHxA_00005		Perfluorohexanoic acid (PFHxA)	1 ug/mL
					LCPFHxDA_00007	200 uL	Perfluorohexadecanoic acid	1 ug/mL

Lab	Name:	TestAmerica	Sacrament	to Jo	ob No.: 3	320-29	732	2-1	

				Reagent	Parent Reagen	ıt		
	Exp	Prep	Dilutant	Final		Volume		
Reagent ID	Date	Date	Used	Volume	Reagent ID	Added	Analyte	Concentration
					LCPFHxS-br_00003	200 uL	Perfluorohexanesulfonic acid (PFHxS)	0.91 ug/m
					LCPFNA 00007	200 uL	Perfluorononanoic acid (PFNA)	1 ug/m
					LCPFOA 00007		Perfluorooctanoic acid (PFOA)	1 ug/m
					LCPFODA_00007		Perfluorooctadecanoic acid	1 ug/m
					LCPFOS-br_00003		Perfluorooctanesulfonic acid (PFOS)	0.928 ug/m
					LCPFOSA_00010		Perfluorooctane Sulfonamide (FOSA)	1 ug/m
					LCPFPeA_00006		Perfluoropentanoic acid (PFPeA)	1 ug/m
					LCPFTeDA_00005		Perfluorotetradecanoic acid (PFTeA)	1 ug/m
					LCPFTrDA_00005		Perfluorotridecanoic Acid (PFTriA)	1 ug/m
					LCPFUdA_00006		Perfluoroundecanoic acid (PFUnA)	1 ug/m
LCPFBA_00006	05/27/21		gton Laboratories, Lot		(Purchased Reage		Perfluorobutanoic acid (PFBA)	50 ug/m
LCPFBS_00006	03/15/21	-	gton Laboratories, Lot		(Purchased Reage		Perfluorobutanesulfonic acid (PFBS)	44.2 ug/m
LCPFDA_00006	05/31/21	Wellin	gton Laboratories, Lot	PFDA0516	(Purchased Reage		Perfluorodecanoic acid (PFDA)	50 ug/m
LCPFDoA_00006	05/31/21		gton Laboratories, Lot		(Purchased Reage		Perfluorododecanoic acid (PFDoA)	50 ug/m
LCPFDS_00005	07/02/20	-	gton Laboratories, Lot		(Purchased Reag		Perfluorodecanesulfonic acid (PFDS)	48.2 ug/m
LCPFHpA_00006	01/22/21	-	gton Laboratories, Lot	-	(Purchased Reage	ent)	Perfluoroheptanoic acid (PFHpA)	50 ug/m
LCPFHpS_00010	11/06/20	Welling	ton Laboratories, Lot I	LPFHpS1115	(Purchased Reag	ent)	Perfluoroheptanesulfonic Acid (PFHpS)	47.6 ug/m
LCPFHxA_00005	12/22/20		gton Laboratories, Lot		(Purchased Reage		Perfluorohexanoic acid (PFHxA)	50 ug/m
LCPFHxDA_00007	05/25/21		ton Laboratories, Lot H		(Purchased Reage		Perfluorohexadecanoic acid	50 ug/m
LCPFHxS-br_00003	07/03/20		on Laboratories, Lot bi		(Purchased Reag		Perfluorohexanesulfonic acid (PFHxS)	45.5 ug/m
LCPFNA_00007	10/23/20	Wellin	gton Laboratories, Lot	PFNA1015	(Purchased Reage		Perfluorononanoic acid (PFNA)	50 ug/m
LCPFOA_00007	08/02/21		gton Laboratories, Lot		(Purchased Reage		Perfluorooctanoic acid (PFOA)	50 ug/m
LCPFODA 00007	04/29/21		gton Laboratories, Lot		(Purchased Reage		Perfluorooctadecanoic acid Perfluorooctanesulfonic acid	50 ug/m
LCPFOS-br_00003	10/14/20	_	con Laboratories, Lot b		(Purchased Reage		(PFOS)	46.4 ug/m
LCPFOSA_00010	09/30/21		gton Laboratories, Lot		(Purchased Reage		Perfluorooctane Sulfonamide (FOSA)	50 ug/m
LCPFPeA_00006	05/31/21		gton Laboratories, Lot		(Purchased Reage		Perfluoropentanoic acid (PFPeA)	50 ug/m
LCPFTeDA_00005	12/09/20		ton Laboratories, Lot H		(Purchased Reage		Perfluorotetradecanoic acid (PFTeA)	50 ug/m
LCPFTrDA_00005	02/12/21	_	ton Laboratories, Lot H		(Purchased Reage		Perfluorotridecanoic Acid (PFTriA)	50 ug/m
LCPFUdA_00006	08/19/20	Welling	gton Laboratories, Lot	PFUdA0815	(Purchased Reag	ent)	Perfluoroundecanoic acid (PFUnA)	50 ug/m
LCPFC_FULL-L6_00006	12/27/17	07/07/17	MeOH/H2O, Lot 090285	5000 uL	LCMPFC ALL SU 00001	250 uL	d-N-EtFOSA-M	50 ng/m
			,				d-N-MeFOSA-M	50 ng/m

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				Reagent	Parent Reage	ent		
	Exp	Prep	Dilutant	Final		Volume		
Reagent ID	Date	Date	Used	Volume	Reagent ID	Added	Analyte	Concentration
							d3-NMeFOSAA	50 ng/mL
							d5-NEtFOSAA	50 ng/mL
							M2-6:2FTS	47.5 ng/mL
							M2-8:2FTS	47.9 ng/mL
							13C2-PFHxDA	50 ng/mL
							13C2-PFTeDA	50 ng/mL
							13C4-PFHpA	50 ng/mL
							13C5 PFPeA	50 ng/mL
							13C8 FOSA	50 ng/mL
							13C4 PFBA	50 ng/mL
							13C2 PFDA	50 ng/mL
							13C2 PFDoA	50 ng/mL
							13C2 PFHxA	50 ng/mL
							1802 PFHxS	47.3 ng/mL
							13C5 PFNA	50 ng/mL
							13C4 PFOA	50 ng/mL
							13C4 PFOS	47.8 ng/mL
							13C2 PFUnA	50 ng/mL
					LCPFC2SP_00037	500 uL	Sodium	93.4 ng/mL
							1H,1H,2H,2H-perfluorohexane	
							sulfonate (4:2)	
							Sodium	94.8 ng/mL
							1H, 1H, 2H, 2H-perfluorooctane	
							sulfonate (6:2) Sodium	0E 0 / T
							1H,1H,2H,2H-perfluorodecane	95.8 ng/mL
							sulfonate (8:2)	
							N-ethylperfluoro-1-octanesulfo	100 ng/mL
							namide	100 1197 1112
							N-ethyl perfluorooctane	100 ng/mL
							sulfonamidoacetic acid	
							MeFOSA	100 ng/mL
							N-methyl perfluorooctane	100 ng/mL
							sulfonamidoacetic acid	
					LCPFCIS_00003		13C2-PFOA	50 ng/mL
					LCPFCSP_00103	500 uL	Perfluorobutanoic acid (PFBA)	100 ng/mL
							Perfluorobutanesulfonic acid	88.4 ng/mL
							(PFBS)	
							Perfluorodecanoic acid (PFDA)	100 ng/mL
							Perfluorododecanoic acid (PFDoA)	100 ng/mL
							Perfluorodecanesulfonic acid (PFDS)	96.4 ng/mL
							Perfluoroheptanoic acid (PFHpA)	100 ng/mL
							Perfluoroheptanesulfonic Acid (PFHpS)	95.2 ng/mL
							Perfluorohexanoic acid (PFHxA)	100 ng/mL
							Perfluorohexadecanoic acid	100 ng/mL

Lab	Name: TestAmerica	Sacramento	Job No.: 320-29732-1

Reagent ID			it	Parent Reager	Reagent				
Reagent ID		1	Volume		_	Dilutant	Pren	Evn	
CAMPICALLSU 00001 12/29/17 06/29/17 Rethanol, Lot Haker 10000 uL Lot-Metrosa-Musical 0/20 uL 0/20-20 uL	Concentration	Analyte		Reagent ID			-	_	Reagent ID
Ferflucronancia acid (FPRA) Perflucrocatal acid (FPRA) Perflucrocatal acid (FPRA) Perflucrocatal acid (PPRA) Perflucrocata	91 ng/mL								
Reffluoroctanoic acid (FFGA) Perfluoroctanoic acid (FFGA) Perfluoroctanesulfonic acid (PCA) Pe	100 ng/mL	` ,							
Refluoroctadecancic acid Perfluoroctanesulfonic acid (FP03) Perfluoroctanesulfonic acid Perfluoroctanesulfonic Perfluoroctanesulfonic Perfluoroctanesulfonic Perfluoroctanesu	100 ng/mL								
LCMPPC_ALL_SU_00001	100 ng/mL	Perfluorooctadecanoic acid							
LCMPFC_ALL_SU_00001	92.8 ng/mL	(PFOS)							
CMPFC_ALL_SU_0001	100 ng/mL								
Perfluorotetradecanoic acid (PFTeA) Perfluorotetradecanoic acid (PFTeA) Perfluorotridecanoic acid (PFTeA) Perfluorotridecanoic acid (PFTriA) Perfluoroundecanoic acid (PFTriA) Perfluoroundecanoic acid (PFUnA) Perf	100 ng/mL								
LCMPFC_ALL_SU_00001	100 ng/mL	Perfluorotetradecanoic acid							
LCMPFC_ALL_SU_00001	100 ng/mL								
LCMPFC_ALL_SU_00001	100 ng/mL								
LCd-NMEFOSA-M 00004	1 ug/mL	` ,	200 uL	LCd-NEtFOSA-M_00005	10000 uL		06/29/17	12/29/17	.LCMPFC_ALL_SU_00001
LCd3-NMEFOSAA 00004	1 ug/mL	d-N-MeFOSA-M	2.00 11Tı	LCd-NMeFOSA-M 00004		141000			
LCd5-NEFFOSAA 00004	1 ug/mL								
LCM2-6:FTS 00004	1 ug/mL								
LCM2-8:2FTS 00004	0.95 ug/mL								
LCM2PFHXDA 00010	0.958 ug/mL								
LCM2FFTeDA 00009	1 ug/mL								
LCM4PFHPA 00009	1 ug/mL	13C2-PFTeDA	200 uL						
LCM5PFPEA 00010	1 ug/mL								
LCM8FOSA 00013	1 ug/mL			LCM5PFPEA 00010					
LCMPFBA 00010	1 ug/mL			LCM8FOSA 00013					
LCMPFDA 00010 200 uL 13C2 PFDA	1 ug/mL	13C4 PFBA	200 uL						
LCMPFHxA 00016	1 ug/mL	13C2 PFDA	200 uL	LCMPFDA 00015					
LCMPFHxS 00010	1 ug/mL	13C2 PFDoA	200 uL	LCMPFDoA 00010					
LCMPFNA 00010	1 ug/mL	13C2 PFHxA	200 uL	LCMPFHxA 00016					
LCMPFOA 00014	0.946 ug/mL	1802 PFHxS	200 uL	LCMPFHxS 00010					
LCMPFOS 00022	1 ug/mL	13C5 PFNA	200 uL	LCMPFNA 00010					
LCMPFUdA 00011 200 uL 13C2 PFUnA	1 ug/mL	13C4 PFOA	200 uL	LCMPFOA 00014					
LCMPFUdA 00011 200 uL 13C2 PFUnA	0.956 ug/mL	13C4 PFOS	200 uL	LCMPFOS 00022					
LCd-NetFosa-M 00005 06/10/21 Wellington, Lot dnetFosa0616M (Purchased Reagent) d-N-EtFosa-M LCd-NMeFosa-M 00004 06/10/21 Wellington, Lot dnetFosa0616M (Purchased Reagent) d-N-MeFosa-M LCd3-NMeFosaa 00004 11/22/21 Wellington, Lot d3NMeFosaa1116 (Purchased Reagent) d3-NMeFosaa LCd5-NetFosaa 00004 11/22/21 Wellington, Lot d5NetFosaa1116 (Purchased Reagent) d5-NetFosaa LCM2-6:FTS_00004 02/17/22 Wellington, Lot M262FTS0217 (Purchased Reagent) M2-6:2FTS LCM2-8:2FTS_00004 08/22/21 Wellington, Lot M282FTS0816 (Purchased Reagent) M2-8:2FTS LCM2PFHxDa_00010 01/07/21 Wellington Laboratories, Lot M2PFHxDa1112 (Purchased Reagent) 13C2-PFHxDa	1 ug/mL								
LCd-NMeFOSA-M 00004 06/10/21 WELLINGTON, Lot dNMeFOSA0616M (Purchased Reagent) d-N-MeFOSA-M LCd3-NMeFOSAA 00004 11/22/21 WELLINGTON, Lot d3NMeFOSAA1116 (Purchased Reagent) d3-NMeFOSAA LCd5-NEtFOSAA 00004 11/22/21 WELLINGTON, Lot d5NEtFOSAA1116 (Purchased Reagent) d5-NEtFOSAA LCM2-6:FTS_00004 02/17/22 WELLINGTON, Lot M262FTS0217 (Purchased Reagent) M2-6:2FTS LCM2-8:2FTS_00004 08/22/21 WELLINGTON, Lot M282FTS0816 (Purchased Reagent) M2-8:2FTS LCM2PFHxDA_00010 01/07/21 Wellington Laboratories, Lot M2PFHxDA1112 (Purchased Reagent) 13C2-PFHxDA	50 ug/mL			<u> </u>	16M	LLINGTON, Lot dNEtFOSA06	WEI	06/10/21	LCd-NEtFOSA-M 00005
LCd3-NMeFOSAA 00004 11/22/21 WELLINGTON, Lot d3NMeFOSAA1116 (Purchased Reagent) d3-NMeFOSAA LCd5-NEtFOSAA 00004 11/22/21 WELLINGTON, Lot d5NEtFOSAA1116 (Purchased Reagent) d5-NEtFOSAA LCM2-6:FTS 00004 02/17/22 WELLINGTON, Lot M262FTS0217 (Purchased Reagent) M2-6:2FTS LCM2-8:2FTS 00004 08/22/21 WELLINGTON, Lot M282FTS0816 (Purchased Reagent) M2-8:2FTS LCM2PFHxDA 00010 01/07/21 Wellington Laboratories, Lot M2PFHxDA1112 (Purchased Reagent) 13C2-PFHxDA	50 ug/mL					<u> </u>			
LCd5-NEtFOSAA 00004 11/22/21 WELLINGTON, Lot d5NEtFOSAA1116 (Purchased Reagent) d5-NEtFOSAA LCM2-6:FTS 00004 02/17/22 WELLINGTON, Lot M262FTS0217 (Purchased Reagent) M2-6:2FTS LCM2-8:2FTS 00004 08/22/21 WELLINGTON, Lot M282FTS0816 (Purchased Reagent) M2-8:2FTS LCM2PFHxDA 00010 01/07/21 Wellington Laboratories, Lot M2PFHxDA1112 (Purchased Reagent) 13C2-PFHxDA	50 ug/mL					<u> </u>			
LCM2-6:FTS_00004 02/17/22 WELLINGTON, Lot M262FTS0217 (Purchased Reagent) M2-6:2FTS LCM2-8:2FTS_00004 08/22/21 WELLINGTON, Lot M282FTS0816 (Purchased Reagent) M2-8:2FTS LCM2PFHxDA_00010 01/07/21 Wellington Laboratories, Lot M2PFHxDA1112 (Purchased Reagent) 13C2-PFHxDA	50 ug/mL								
LCM2-8:2FTS 00004 08/22/21 WELLINGTON, Lot M282FTS0816 (Purchased Reagent) M2-8:2FTS LCM2PFHxDA_00010 01/07/21 Wellington Laboratories, Lot M2PFHxDA1112 (Purchased Reagent) 13C2-PFHxDA	47.5 ug/mL								
LCM2PFHxDA_00010 01/07/21 Wellington Laboratories, Lot M2PFHxDA1112 (Purchased Reagent) 13C2-PFHxDA	47.9 ug/mL								
	50 ug/mL								
LCMZFFTEDA UUUU9	50 ug/mL	13C2-PFTeDA		(Purchased Reag		on Laboratories, Lot M2P		12/07/20	LCM2PFTeDA 00009
LCM4PFHPA 00009 05/27/21 Wellington Laboratories, Lot M4PFHPA0516 (Purchased Reagent) 13C4-PFHPA	50 ug/mL					-			
LCMT5FFPEA 00010 11/22/21 Wellington Laboratories, Lot M5PFPEA1116 (Purchased Reagent) 13C5 FFPEA	50 ug/mL								
LCM8FOSA 00013 12/22/20 Wellington Laboratories, Lot M8FOSA1215I (Purchased Reagent) 13C8 FOSA	50 ug/mL					·			

Lab	Name:	TestAmerica	Sacramento	Job No.: 320-29732-1

				Reagent	Parent Reage	ent		
	Exp	Prep	Dilutant	Final		Volume		
Reagent ID	Date	Date	Used	Volume	Reagent ID	Added	Analyte	Concentration
LCMPFBA 00010	05/24/21	Welling	ton Laboratories, Lot M	FBA0516	(Purchased Rea	agent)	13C4 PFBA	50 ug/mL
LCMPFDA 00015	09/30/21	Welling	ton Laboratories, Lot M	PFDA0916	(Purchased Rea	agent)	13C2 PFDA	50 ug/mL
LCMPFDoA 00010	04/08/21	Welling	ton Laboratories, Lot MP	FDoA0416	(Purchased Rea	agent)	13C2 PFDoA	50 ug/mL
LCMPFHxA 00016	11/22/21	Welling	ton Laboratories, Lot MP	FHxA1116	(Purchased Rea	agent)	13C2 PFHxA	50 ug/mL
LCMPFHxS 00010	02/17/22	Welling	ton Laboratories, Lot MP	FHxS0217	(Purchased Rea	agent)	1802 PFHxS	47.3 ug/mL
LCMPFNA 00010	09/30/21		ton Laboratories, Lot M		(Purchased Rea	agent)	13C5 PFNA	50 ug/mL
LCMPFOA 00014	04/12/22	Welling	ton Laboratories, Lot M	PFOA0417	(Purchased Rea	agent)	13C4 PFOA	50 ug/mL
LCMPFOS 00022	12/12/21		ton Laboratories, Lot M		(Purchased Rea	agent)	13C4 PFOS	47.8 ug/mL
LCMPFUdA 00011	11/22/21	Welling	ton Laboratories, Lot MP	FUdA1116	(Purchased Rea	agent)	13C2 PFUnA	50 ug/mL
.LCPFC2SP 00037			Methanol, Lot 104453	10 mL		200 uL	Sodium	0.934 ug/mL
	12, 11, 21				_		1H,1H,2H,2H-perfluorohexane sulfonate (4:2)	3.
					LC6:2FTS_00003	200 uL	Sodium 1H,1H,2H,2H-perfluorooctane sulfonate (6:2)	0.948 ug/mL
					LC8:2FTS_00003	200 uL	Sodium 1H,1H,2H,2H-perfluorodecane sulfonate (8:2)	0.958 ug/mL
					LCN-EtFOSA-M_00004		N-ethylperfluoro-1-octanesulfo namide	1 ug/mL
					LCN-EtFOSAA_00002		N-ethyl perfluorooctane sulfonamidoacetic acid	1 ug/mL
					LCN-MeFOSA-M_00003		MeFOSA	1 ug/mL
					LCN-MeFOSAA_00003		N-methyl perfluorooctane sulfonamidoacetic acid	1 ug/mL
LC4:2FTS_00002	12/12/21	1	WELLINGTON, Lot 42FTS121	6	(Purchased Rea	agent)	Sodium 1H,1H,2H,2H-perfluorohexane sulfonate (4:2)	46.7 ug/mL
LC6:2FTS_00003	06/25/21	1	WELLINGTON, Lot 62FTS061	6	(Purchased Rea	igent)	Sodium 1H,1H,2H,2H-perfluorooctane sulfonate (6:2)	47.4 ug/mL
LC8:2FTS_00003	08/22/21	1	WELLINGTON, Lot 82FTS081	6	(Purchased Rea	igent)	Sodium 1H,1H,2H,2H-perfluorodecane sulfonate (8:2)	47.9 ug/mL
LCN-EtFOSA-M_00004	05/24/21	WE	LLINGTON, Lot NEtFOSA051	. 6М	(Purchased Rea	igent)	N-ethylperfluoro-1-octanesulfo namide	50 ug/mL
LCN-EtFOSAA_00002	01/20/21	WE	LLINGTON, Lot NETFOSAA01	16	(Purchased Rea	igent)	N-ethyl perfluorooctane sulfonamidoacetic acid	50 ug/mL
LCN-MeFOSA-M_00003	05/24/21		LLINGTON, Lot NMeFOSA051		(Purchased Rea		MeFOSA	50 ug/mL
LCN-MeFOSAA_00003	01/20/21		LLINGTON, Lot NMeFOSAA01		(Purchased Rea		N-methyl perfluorooctane sulfonamidoacetic acid	50 ug/mL
.LCPFCIS_00003			Methanol, Lot 14139		LCM2PFOA_00005		13C2-PFOA	5 ug/mL
LCM2PFOA 00005	06/19/18		ton Laboratories, Lot M2	PFOA0613	(Purchased Rea	igent)	13C2-PFOA	50 ug/mL
.LCPFCSP 00103	12/27/17	06/27/17	Methanol, Lot 090285	10000 uL	LCPFBA 00006	200 uL	Perfluorobutanoic acid (PFBA)	1 ug/mL
_					LCPFBS_00006		Perfluorobutanesulfonic acid (PFBS)	0.884 ug/mL
					LCPFDA 00006	200 uL	Perfluorodecanoic acid (PFDA)	1 ug/mL
					LCPFDoA 00006	200 uL	Perfluorododecanoic acid	1 ug/mL
					=		(PFDoA)	

Lab	Name:	TestAmerica	Sacramento	Job No.: 320-29732-1

				Reagent	Parent Reage	ent		
	Exp	Prep	Dilutant	Final		Volume		
Reagent ID	Date	Date	Used	Volume	Reagent ID	Added	Analyte	Concentration
					LCPFDS_00005	200 uL	Perfluorodecanesulfonic acid (PFDS)	0.964 ug/mL
					LCPFHpA_00006	200 uL	Perfluoroheptanoic acid (PFHpA)	1 ug/mL
					LCPFHpS_00010	200 uL		0.952 ug/mL
					LCPFHxA 00005	200 uL	Perfluorohexanoic acid (PFHxA)	1 ug/mL
					LCPFHxDA_00007		Perfluorohexadecanoic acid	1 ug/mL
					LCPFHxS-br_00003		Perfluorohexanesulfonic acid (PFHxS)	0.91 ug/mL
					LCPFNA_00007	200 uL	Perfluorononanoic acid (PFNA)	1 ug/mL
					LCPFOA_00007	200 uL	Perfluorooctanoic acid (PFOA)	1 ug/mL
					LCPFODA_00007		Perfluorooctadecanoic acid	1 ug/mL
					LCPFOS-br_00003		Perfluorooctanesulfonic acid (PFOS)	0.928 ug/mL
					LCPFOSA_00010		Perfluorooctane Sulfonamide (FOSA)	1 ug/mL
					LCPFPeA_00006		Perfluoropentanoic acid (PFPeA)	1 ug/mL
					LCPFTeDA_00005		Perfluorotetradecanoic acid (PFTeA)	1 ug/mL
					LCPFTrDA_00005	200 uL	Perfluorotridecanoic Acid (PFTriA)	1 ug/mL
					LCPFUdA_00006	200 uL	Perfluoroundecanoic acid (PFUnA)	1 ug/mL
LCPFBA 00006	05/27/21	Welling	gton Laboratories, Lo	ot PFBA0516	(Purchased Rea	gent)	Perfluorobutanoic acid (PFBA)	50 ug/mL
LCPFBS_00006	03/15/21	Welling	ton Laboratories, Lo	t LPFBS0316	(Purchased Rea	gent)	Perfluorobutanesulfonic acid (PFBS)	44.2 ug/mL
LCPFDA_00006	05/31/21	Wellin	gton Laboratories, Lo	ot PFDA0516	(Purchased Rea		Perfluorodecanoic acid (PFDA)	50 ug/mL
LCPFDoA_00006	05/31/21		ton Laboratories, Lo		(Purchased Rea	gent)	Perfluorododecanoic acid (PFDoA)	50 ug/mL
LCPFDS_00005	07/02/20	_	ton Laboratories, Lo		(Purchased Rea	gent)	Perfluorodecanesulfonic acid (PFDS)	48.2 ug/mL
LCPFHpA_00006	01/22/21	_	ton Laboratories, Lo	-	(Purchased Rea	gent)	Perfluoroheptanoic acid (PFHpA)	50 ug/mL
LCPFHpS_00010	11/06/20	Welling	ton Laboratories, Lot	t LPFHpS1115	(Purchased Rea	gent)	Perfluoroheptanesulfonic Acid (PFHpS)	47.6 ug/mL
LCPFHxA_00005	12/22/20		ton Laboratories, Lo		(Purchased Rea		Perfluorohexanoic acid (PFHxA)	50 ug/mL
LCPFHxDA_00007	05/25/21	Welling	ton Laboratories, Lot	t PFHxDA0516	(Purchased Rea		Perfluorohexadecanoic acid	50 ug/mL
LCPFHxS-br_00003	07/03/20	Wellingto	on Laboratories, Lot	brPFHxSK0615	(Purchased Rea	gent)	Perfluorohexanesulfonic acid (PFHxS)	45.5 ug/mL
LCPFNA_00007	10/23/20		gton Laboratories, Lo		(Purchased Rea		Perfluorononanoic acid (PFNA)	50 ug/mL
LCPFOA 00007	08/02/21		gton Laboratories, Lo		(Purchased Rea		Perfluorooctanoic acid (PFOA)	50 ug/mL
LCPFODA_00007	04/29/21		ton Laboratories, Lo		(Purchased Rea		Perfluorooctadecanoic acid	50 ug/mL
LCPFOS-br_00003	10/14/20		on Laboratories, Lot		(Purchased Rea		Perfluorooctanesulfonic acid (PFOS)	46.4 ug/mL
LCPFOSA_00010	09/30/21	Welling	ton Laboratories, Lo	t FOSA0916I	(Purchased Rea	gent)	Perfluorooctane Sulfonamide (FOSA)	50 ug/mL
LCPFPeA_00006	05/31/21	Welling	ton Laboratories, Lo	t PFPeA0516	(Purchased Rea	gent)	Perfluoropentanoic acid (PFPeA)	50 ug/mL

Lab	Name:	TestAmerica	Sacramento	Job No.: 320-29732-1	

				Reagent	Parent Reagent			
	Exp	Prep	Dilutant	Final		Volume	=	
Reagent ID	Date	Date	Used	Volume	Reagent ID	Added	Analyte	Concentration
LCPFTeDA_00005	12/09/20	Welling	ton Laboratories, Lot	PFTeDA1215	(Purchased Reag	ent)	Perfluorotetradecanoic acid (PFTeA)	50 ug/mL
LCPFTrDA_00005	02/12/21	Welling	ton Laboratories, Lot	PFTrDA0216	(Purchased Reag	ent)	Perfluorotridecanoic Acid (PFTriA)	50 ug/mL
LCPFUdA_00006	08/19/20	Welling	gton Laboratories, Lot	PFUdA0815	(Purchased Reag	ent)	Perfluoroundecanoic acid (PFUnA)	50 ug/mL
LCPFC FULL-L7 00004	12/27/17	07/07/17	MeOH/H2O, Lot 090285	5000 uL	LCMPFC ALL SU 00001	250 uL	d-N-EtFOSA-M	50 ng/mL
							d-N-MeFOSA-M	50 ng/mI
							d3-NMeFOSAA	50 ng/mI
							d5-NEtFOSAA	50 ng/mI
							M2-6:2FTS	47.5 ng/mL
							M2-8:2FTS	47.9 ng/mL
							13C2-PFHxDA	50 ng/mL
							13C2-PFTeDA	50 ng/mL
							13C4-PFHpA	50 ng/mL
							13C5 PFPeA	50 ng/mL
							13C8 FOSA	50 ng/mL
							13C4 PFBA	50 ng/mL
							13C2 PFDA	50 ng/mL
							13C2 PFDoA	50 ng/mL
							13C2 PFHxA	50 ng/mL
							1802 PFHxS	47.3 ng/mL
							13C5 PFNA	50 ng/mL
							13C4 PFOA	50 ng/mL
						13C4 PFOS	47.8 ng/mL	
							13C2 PFUnA	50 ng/mL
					LCPFC2SP 00037	1000 117	Sodium	186.8 ng/mL
					DC11C251_00037	1000 41	1H,1H,2H,2H-perfluorohexane	100.0 119/1111
							sulfonate (4:2)	
							Sodium	189.6 ng/mL
							1H, 1H, 2H, 2H-perfluorooctane	100.0 119/1112
							sulfonate (6:2)	
							Sodium	191.6 ng/mL
							1H, 1H, 2H, 2H-perfluorodecane	, , , ,
							sulfonate (8:2)	
							N-ethylperfluoro-1-octanesulfo	200 ng/mL
							namide	
							N-ethyl perfluorooctane	200 ng/mL
							sulfonamidoacetic acid	
							MeFOSA	200 ng/mL
							N-methyl perfluorooctane	200 ng/mL
							sulfonamidoacetic acid	
					LCPFCIS_00003		13C2-PFOA	50 ng/mL
					LCPFCSP_00103	1000 uL	Perfluorobutanoic acid (PFBA)	200 ng/mL
							Perfluorobutanesulfonic acid	176.8 ng/mL
							(PFBS)	
							Perfluorodecanoic acid (PFDA)	200 ng/mL
							Perfluorododecanoic acid	200 ng/mL
							(PFDoA)	

Lab Name	e: TestAmerica	Sacramento	Job No.: 320-29732-1
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				Reagent	Parent Read	gent		
	Exp Pre	2	Dilutant	Final		Volume		
Reagent ID	Date Dat	.	Used	Volume	Reagent ID	Added	Analyte	Concentration
							Perfluorodecanesulfonic acid (PFDS)	192.8 ng/mL
							Perfluoroheptanoic acid (PFHpA)	200 ng/mL
							Perfluoroheptanesulfonic Acid (PFHpS)	190.4 ng/mL
							Perfluorohexanoic acid (PFHxA)	200 ng/mL
							Perfluorohexadecanoic acid	200 ng/mL
							Perfluorohexanesulfonic acid (PFHxS)	182 ng/mL
							Perfluorononanoic acid (PFNA)	200 ng/mL
							Perfluorooctanoic acid (PFOA)	200 ng/mL
							Perfluorooctadecanoic acid	200 ng/mL
							Perfluorooctanesulfonic acid	185.6 ng/mL
							(PFOS) Perfluorooctane Sulfonamide	200 /
							Feriluorooctane Sulionamide (FOSA)	200 ng/mL
							Perfluoropentanoic acid	200 ng/mL
							(PFPeA)	_
							Perfluorotetradecanoic acid (PFTeA)	200 ng/mL
							Perfluorotridecanoic Acid	200 ng/mL
							(PFTriA) Perfluoroundecanoic acid	200 ng/mL
							(PFUnA)	_
.LCMPFC_ALL_SU_00001	12/29/17 06/29	/17 Methand 141039	ol, Lot Baker	10000 uL	LCd-NEtFOSA-M_0000	5 200 uL	d-N-EtFOSA-M	1 ug/mL
					LCd-NMeFOSA-M_0000	4 200 uL	d-N-MeFOSA-M	1 ug/mL
					LCd3-NMeFOSAA_0000		d3-NMeFOSAA	1 ug/mL
					LCd5-NEtFOSAA_0000		d5-NEtFOSAA	1 ug/mL
					LCM2-6:FTS_00004		M2-6:2FTS	0.95 ug/mL
					LCM2-8:2FTS_00004		M2-8:2FTS	0.958 ug/mL
					LCM2PFHxDA_00010		13C2-PFHxDA	1 ug/mL
					LCM2PFTeDA_00009		13C2-PFTeDA	1 ug/mL
					LCM4PFHPA_00009	200 uL	13C4-PFHpA	1 ug/mL
					LCM5PFPEA_00010		13C5 PFPeA 13C8 FOSA	1 ug/mL
					LCM8FOSA_00013 LCMPFBA_00010		13C8 FOSA 13C4 PFBA	1 ug/mL 1 ug/mL
					LCMPFDA 00015		13C4 PFBA	1 ug/mL
					LCMPFDoA 00010		13C2 PFDoA	1 ug/mL
					LCMPFHxA 00016		13C2 PFHXA	1 ug/mL
					LCMPFHxS 00010		1802 PFHxS	0.946 ug/mL
					LCMPFNA 00010		13C5 PFNA	1 ug/mL
					LCMPFOA 00014		13C4 PFOA	1 ug/mL
					LCMPFOS 00022		13C4 PFOS	0.956 ug/mL
					LCMPFUdA 00011		13C2 PFUnA	1 ug/mL
LCd-NEtFOSA-M_00005	06/10/21	WELLINGTON	, Lot dNEtFOSA06	1 6M	(Purchased Re	agent)	d-N-EtFOSA-M	50 ug/mL
LCd-NMeFOSA-M_00004	06/10/21		, Lot dNMeFOSA06		(Purchased Re	eagent)	d-N-MeFOSA-M	50 ug/mL
LCd3-NMeFOSAA_00004	11/22/21	WELLINGTON	, Lot d3NMeFOSAA1	116	(Purchased Re	eagent)	d3-NMeFOSAA	50 ug/mL

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				Reagent	Parent Reage	ent		
Reagent ID	Exp Date	Prep Date	Dilutant Fi	Final Volume	Reagent ID	Volume Added	Analyte	Concentration
LCd5-NEtFOSAA 00004	11/22/21	WEL	LINGTON, Lot d5NEtFO	SAA1116	(Purchased Rea	gent)	d5-NEtFOSAA	50 ug/mL
LCM2-6:FTS 00004	02/17/22	WI	ELLINGTON, Lot M262F7	rs0217	(Purchased Rea	gent)	M2-6:2FTS	47.5 ug/mL
LCM2-8:2FTS 00004	08/22/21		ELLINGTON, Lot M282F7		(Purchased Rea		M2-8:2FTS	47.9 ug/mL
LCM2PFHxDA 00010	01/07/21	Wellingto	on Laboratories, Lot	M2PFHxDA1112	(Purchased Rea	gent)	13C2-PFHxDA	50 ug/mL
LCM2PFTeDA 00009	12/07/20	Wellingto	on Laboratories, Lot	M2PFTeDA0217	(Purchased Rea	gent)	13C2-PFTeDA	50 ug/mL
LCM4PFHPA 00009	05/27/21	Wellingt	on Laboratories, Lot	M4PFHpA0516	(Purchased Rea		13C4-PFHpA	50 ug/mL
LCM5PFPEA 00010	11/22/21		on Laboratories, Lot		(Purchased Rea	gent)	13C5 PFPeA	50 ug/mL
LCM8FOSA 00013	12/22/20	Wellingt	on Laboratories, Lot	M8FOSA1215I	(Purchased Rea	gent)	13C8 FOSA	50 ug/mL
LCMPFBA 00010	05/24/21	Welling	ton Laboratories, Lo	t MPFBA0516	(Purchased Rea		13C4 PFBA	50 ug/mL
LCMPFDA 00015	09/30/21	Welling	ton Laboratories, Lo	t MPFDA0916	(Purchased Rea		13C2 PFDA	50 ug/mL
LCMPFDoA 00010	04/08/21		on Laboratories, Lot		(Purchased Rea	gent)	13C2 PFDoA	50 ug/mL
LCMPFHxA 00016	11/22/21		on Laboratories, Lot		(Purchased Rea	<i></i>	13C2 PFHxA	50 ug/mL
LCMPFHxS 00010	02/17/22		on Laboratories, Lot		(Purchased Rea	<i></i>	1802 PFHxS	47.3 ug/mL
LCMPFNA 00010	09/30/21		ton Laboratories, Lo		(Purchased Rea		13C5 PFNA	50 ug/mL
LCMPFOA 00014	04/12/22		ton Laboratories, Lo		(Purchased Rea		13C4 PFOA	50 ug/mL
LCMPFOS 00022	12/12/21		ton Laboratories, Lo		(Purchased Rea	<i></i>	13C4 PFOS	47.8 ug/mL
LCMPFUdA 00011	11/22/21		on Laboratories, Lot		(Purchased Rea		13C2 PFUnA	50 ug/mL
.LCPFC2SP 00037			Methanol, Lot 104453		LC4:2FTS 00002		Sodium	0.934 ug/mL
. 2011 0201 _ 0000 /	01,07,10	01,01,11	110011011, 200 101100		_	200 42	1H,1H,2H,2H-perfluorohexane sulfonate (4:2)	0.301 dg/2
					LC6:2FTS_00003		Sodium 1H,1H,2H,2H-perfluorooctane sulfonate (6:2)	0.948 ug/mL
					LC8:2FTS_00003		Sodium 1H,1H,2H,2H-perfluorodecane sulfonate (8:2)	0.958 ug/mL
					LCN-EtFOSA-M_00004		N-ethylperfluoro-1-octanesulfo namide	1 ug/mL
					LCN-EtFOSAA_00002	200 uL	N-ethyl perfluorooctane sulfonamidoacetic acid	1 ug/mL
					LCN-MeFOSA-M_00003		MeFOSA	1 ug/mL
					LCN-MeFOSAA_00003	200 uL	N-methyl perfluorooctane sulfonamidoacetic acid	1 ug/mL
LC4:2FTS_00002	12/12/21	V	VELLINGTON, Lot 42FTS	31216	(Purchased Rea	gent)	Sodium 1H,1H,2H,2H-perfluorohexane sulfonate (4:2)	46.7 ug/mL
LC6:2FTS_00003	06/25/21	V	WELLINGTON, Lot 62FTS	30616	(Purchased Rea	gent)	Sodium 1H,1H,2H,2H-perfluorooctane sulfonate (6:2)	47.4 ug/mL
LC8:2FTS_00003	08/22/21	Ū	WELLINGTON, Lot 82FTS	50816	(Purchased Read	gent)	Sodium 1H,1H,2H,2H-perfluorodecane sulfonate (8:2)	47.9 ug/mL
LCN-EtFOSA-M_00004	05/24/21	WE	LLINGTON, Lot NEtFOS	A0516M	(Purchased Read	gent)	N-ethylperfluoro-1-octanesulfo namide	50 ug/mL
LCN-EtFOSAA_00002	01/20/21	WE	LLINGTON, Lot NEtFOS	AA0116	(Purchased Rea	,	N-ethyl perfluorooctane sulfonamidoacetic acid	50 ug/mL
LCN-MeFOSA-M_00003	05/24/21		LLINGTON, Lot NMeFOS		(Purchased Rea	gent)	MeFOSA	50 ug/mL
LCN-MeFOSAA_00003	01/20/21	WE	LLINGTON, Lot NMeFOS	AA0116	(Purchased Rea	gent)	N-methyl perfluorooctane sulfonamidoacetic acid	50 ug/mL

Lab	Name:	TestAmerica	Sacrament	to Job No.: 320-29732-1

				Reagent	Parent Reag	ent		
	Exp	Prep	Dilutant	Final		Volume		
Reagent ID	Date	Date	Used	Volume	Reagent ID	Added	Analyte	Concentration
LCM2PFOA 00005	06/19/18	Welling	ton Laboratories, Lot M2	PFOA0613	(Purchased Rea	agent)	13C2-PFOA	50 ug/mL
.LCPFCSP 00103	12/27/17		Methanol, Lot 090285		LCPFBA 00006	200 uL	Perfluorobutanoic acid (PFBA)	1 ug/mL
_			•		LCPFBS_00006	200 uL	Perfluorobutanesulfonic acid (PFBS)	0.884 ug/mL
					LCPFDA 00006	200 uL	Perfluorodecanoic acid (PFDA)	1 ug/mL
					LCPFDoA_00006		Perfluorododecanoic acid (PFDoA)	1 ug/mL
					LCPFDS_00005		Perfluorodecanesulfonic acid (PFDS)	0.964 ug/mL
					LCPFHpA_00006		Perfluoroheptanoic acid (PFHpA)	1 ug/mL
					LCPFHpS_00010	200 uL	Perfluoroheptanesulfonic Acid (PFHpS)	0.952 ug/mL
					LCPFHxA 00005	200 uL	Perfluorohexanoic acid (PFHxA)	1 ug/mL
					LCPFHxDA_00007		Perfluorohexadecanoic acid	1 ug/mL
					LCPFHxS-br_00003	200 uL	Perfluorohexanesulfonic acid (PFHxS)	0.91 ug/mL
					LCPFNA_00007		Perfluorononanoic acid (PFNA)	1 ug/mL
					LCPFOA_00007		Perfluorooctanoic acid (PFOA)	1 ug/mL
					LCPFODA_00007		Perfluorooctadecanoic acid	1 ug/mL
					LCPFOS-br_00003		Perfluorooctanesulfonic acid (PFOS)	0.928 ug/mL
					LCPFOSA_00010		Perfluorooctane Sulfonamide (FOSA)	1 ug/mL
					LCPFPeA_00006		Perfluoropentanoic acid (PFPeA)	1 ug/mL
					LCPFTeDA_00005		Perfluorotetradecanoic acid (PFTeA)	1 ug/mL
					LCPFTrDA_00005		Perfluorotridecanoic Acid (PFTriA)	1 ug/mL
					LCPFUdA_00006		Perfluoroundecanoic acid (PFUnA)	1 ug/mL
LCPFBA_00006	05/27/21	Welling	gton Laboratories, Lot F	FBA0516	(Purchased Rea		Perfluorobutanoic acid (PFBA)	50 ug/mL
LCPFBS_00006	03/15/21	_	ton Laboratories, Lot L		(Purchased Rea		Perfluorobutanesulfonic acid (PFBS)	44.2 ug/mL
LCPFDA_00006	05/31/21	Welling	gton Laboratories, Lot F	FDA0516	(Purchased Rea		Perfluorodecanoic acid (PFDA)	50 ug/mL
LCPFDoA_00006	05/31/21	_	ton Laboratories, Lot P		(Purchased Rea		Perfluorododecanoic acid (PFDoA)	50 ug/mL
LCPFDS_00005	07/02/20		ton Laboratories, Lot L		(Purchased Rea	agent)	Perfluorodecanesulfonic acid (PFDS)	48.2 ug/mL
LCPFHpA_00006	01/22/21		ton Laboratories, Lot P	-	(Purchased Rea	agent)	Perfluoroheptanoic acid (PFHpA)	50 ug/mL
LCPFHpS_00010	11/06/20	Welling	ton Laboratories, Lot LE	FHpS1115	(Purchased Rea	agent)	Perfluoroheptanesulfonic Acid (PFHpS)	47.6 ug/mL
LCPFHxA_00005	12/22/20		ton Laboratories, Lot P		(Purchased Rea	agent)	Perfluorohexanoic acid (PFHxA)	50 ug/mL
LCPFHxDA_00007	05/25/21		ton Laboratories, Lot PE		(Purchased Rea		Perfluorohexadecanoic acid	50 ug/mL
LCPFHxS-br_00003	07/03/20	Wellingto	on Laboratories, Lot br	FHxSK0615	(Purchased Rea	agent)	Perfluorohexanesulfonic acid (PFHxS)	45.5 ug/mL
LCPFNA_00007	10/23/20		gton Laboratories, Lot E		(Purchased Rea		Perfluorononanoic acid (PFNA)	50 ug/mL
LCPFOA_00007	08/02/21	Welling	gton Laboratories, Lot E	FOA0716	(Purchased Rea	agent)	Perfluorooctanoic acid (PFOA)	50 ug/mL

Lab	Name:	TestAmerica	Sacramento	Job No.	: 320-29732-1

				Reagent	Parent Reager	nt		
Reagent ID	Exp Date	Prep Date	Dilutant Used	Final Volume	Reagent ID	Volume Added	Analyte	Concentration
LCPFODA 00007	04/29/21	Welling	gton Laboratories, Lot	PFODA0416	(Purchased Reag	ent)	Perfluorooctadecanoic acid	50 ug/mL
LCPFOS-br_00003	10/14/20	Wellingt	on Laboratories, Lot	brPFOSK1015	(Purchased Reag	ent)	Perfluorooctanesulfonic acid (PFOS)	46.4 ug/mL
LCPFOSA_00010	09/30/21	Welling	ton Laboratories, Lot	FOSA0916I	(Purchased Reag	ent)	Perfluorooctane Sulfonamide (FOSA)	50 ug/mL
LCPFPeA_00006	05/31/21		ton Laboratories, Lot		(Purchased Reag	ent)	Perfluoropentanoic acid (PFPeA)	50 ug/mL
LCPFTeDA_00005	12/09/20	Welling	ton Laboratories, Lot	PFTeDA1215	(Purchased Reag	ent)	Perfluorotetradecanoic acid (PFTeA)	50 ug/mL
LCPFTrDA_00005	02/12/21	Welling	ton Laboratories, Lot	PFTrDA0216	(Purchased Reag	rent)	Perfluorotridecanoic Acid (PFTriA)	50 ug/mL
LCPFUdA_00006	08/19/20	Welling	ton Laboratories, Lot	PFUdA0815	(Purchased Reag	ent)	Perfluoroundecanoic acid (PFUnA)	50 ug/mL
LCPFC2SP_00032	10/14/17	04/21/17	Methanol, Lot 104453	200 mL	LCPFC2SP_00030	4 mL	Sodium 1H,1H,2H,2H-perfluorohexane sulfonate (4:2)	0.01868 ug/mL
							Sodium 1H,1H,2H,2H-perfluorooctane sulfonate (6:2)	0.01896 ug/mL
							Sodium 1H,1H,2H,2H-perfluorodecane sulfonate (8:2)	0.01916 ug/mL
							N-ethylperfluoro-1-octanesulfo namide	0.02 ug/mL
							N-ethyl perfluorooctane sulfonamidoacetic acid	0.02 ug/mL
							MeFOSA	0.02 ug/mL
							N-methyl perfluorooctane sulfonamidoacetic acid	0.02 ug/mL
.LCPFC2SP_00030	10/14/17	04/14/17	Methanol, Lot 104453	10000 uL	LC4:2FTS_00002		Sodium 1H,1H,2H,2H-perfluorohexane sulfonate (4:2)	0.934 ug/mL
					LC6:2FTS_00002	200 uL	Sodium 1H,1H,2H,2H-perfluorooctane sulfonate (6:2)	0.948 ug/mL
					LC8:2FTS_00002		Sodium 1H,1H,2H,2H-perfluorodecane sulfonate (8:2)	0.958 ug/mL
					LCN-EtFOSA-M_00003	200 uL	N-ethylperfluoro-1-octanesulfo namide	1 ug/mL
					LCN-EtFOSAA_00002	200 uL	N-ethyl perfluorooctane sulfonamidoacetic acid	1 ug/mL
					LCN-MeFOSA-M_00002		MeFOSA	1 ug/mL
					LCN-MeFOSAA_00003	200 uL	N-methyl perfluorooctane sulfonamidoacetic acid	1 ug/mL
LC4:2FTS_00002	12/12/21		WELLINGTON, Lot 42FTS	1216	(Purchased Reag	ent)	Sodium 1H,1H,2H,2H-perfluorohexane sulfonate (4:2)	46.7 ug/mL

Lab	Name:	TestAmerica	Sacramento	Job No.: 320-29732-1	

				Reagent	Parent Reag	ent		
Reagent ID	Exp Date	Prep Date	Dilutant Used	Final Volume	Reagent ID	Volume Added	- Analyte	Concentration
LC6:2FTS_00002	06/25/21		WELLINGTON, Lot 62FTS06	16	(Purchased Rea	agent)	Sodium 1H,1H,2H,2H-perfluorooctane sulfonate (6:2)	47.4 ug/mL
LC8:2FTS_00002	10/23/20	1	WELLINGTON, Lot 82FTS10	15	(Purchased Rea	agent)	Sodium 1H,1H,2H,2H-perfluorodecane sulfonate (8:2)	47.9 ug/mL
LCN-EtFOSA-M_00003	05/24/21	WE	LLINGTON, Lot NETFOSA05	516M	(Purchased Rea	agent)	N-ethylperfluoro-1-octanesulfo namide	50 ug/mL
LCN-EtFOSAA_00002	01/20/21	WE	ELLINGTON, Lot NETFOSAAO)116	(Purchased Rea	agent)	N-ethyl perfluorooctane sulfonamidoacetic acid	50 ug/mL
LCN-MeFOSA-M 00002	05/24/21	WE	LLINGTON, Lot NMeFOSA07	714M	(Purchased Rea	agent)	MeFOSA	50 ug/mL
LCN-MeFOSAA_00003	01/20/21 WELLINGTON, Lot NMeFOSAA0116				(Purchased Rea	agent)	N-methyl perfluorooctane sulfonamidoacetic acid	50 ug/mL
LCPFCIC FULL 00003	09/02/17	05/30/17	MeOH/H2O, Lot 09285	5050 uL	LCMPFC2SU 00019	250 uL	d-N-EtFOSA-M	49.505 ng/mL
			, , , ,				d-N-MeFOSA-M	49.505 ng/mL
							d3-NMeFOSAA	49.505 ng/mI
							d5-NEtFOSAA	49.505 ng/mI
							M2-6:2FTS	47.0297 ng/mI
							M2-8:2FTS	47.4257 ng/mI
					LCMPFCSU 00069	250 117	13C2-PFHxDA	49.505 ng/mI
					LCMFFC30_00009	230 ul	13C2-FFHXDA 13C2-PFTeDA	49.505 ng/ml
							13C4-PFHpA	49.505 ng/mL
							13C5 PFPeA	49.505 ng/mI
					13C8 FOSA	49.505 ng/mI		
							13C4 PFBA	49.505 ng/mI
							13C2 PFDA	49.505 ng/mI
							13C2 PFDoA	49.505 ng/mI
							13C2 PFHxA	49.505 ng/mI
							1802 PFHxS	46.8317 ng/mI
							13C5 PFNA	49.505 ng/mI
							13C4 PFOA	49.505 ng/mI
							13C4 PFOS	47.3267 ng/mI
							13C2 PFUnA	49.505 ng/mI
					LCPFACMXB 00007	125 uL	Perfluorobutanesulfonic acid	43.8119 ng/mI
					_		(PFBS)	
							Perfluorobutanoic acid (PFBA)	49.505 ng/mI
							Perfluorodecanesulfonic acid (PFDS)	47.7723 ng/mI
							Perfluorodecanoic acid (PFDA)	49.505 ng/mL
							Perfluorododecanoic acid (PFDoA)	49.505 ng/mL
							Perfluoroheptanoic acid (PFHpA)	49.505 ng/mL
							Perfluorohexanesulfonic acid (PFHxS)	46.7822 ng/mL
							Perfluorohexanoic acid (PFHxA)	49.505 ng/mL
							Perfluorononanoic acid (PFNA)	49.505 ng/mL
							Perfluorooctanesulfonic acid	47.2772 ng/mL
I							(PFOS)	

ab Name: TestAmerica Sacramento	Job No.: 320-29732-1
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				D	Parent Reager	nt		
	Erm	Prep	Dilutant	Reagent Final		Volume		
Reagent ID	Exp Date	Date	Used	Volume	Reagent ID	Added	Analyte	Concentration
Reagent 1D	Date	Date	useu	VOI unie	Reagent ID	Added	=	
							Perfluorooctanoic acid (PFOA)	49.505 ng/mL
							Perfluoropentanoic acid	49.505 ng/mL
							(PFPeA) Perfluorotetradecanoic acid	49.505 ng/mL
							(PFTeA)	49.505 Hg/IIIL
							Perfluorotridecanoic Acid	49.505 ng/mL
							(PFTriA)	
							Perfluoroundecanoic acid	49.505 ng/mL
							(PFUnA)	
					LCPFC3IM_00007	250 uL	Perfluoroheptanesulfonic Acid (PFHpS)	47.1287 ng/mL
							Perfluorooctane Sulfonamide	49.505 ng/mL
	11111111						(FOSA)	
.LCMPFC2SU_00019	11/30/17	05/30/17	Methanol, Lot 104453	5000 uL	LCd-NEtFOSA-M_00005		d-N-EtFOSA-M	1 ug/mL
					LCd-NMeFOSA-M_00004		d-N-MeFOSA-M	1 ug/mL
					LCd3-NMeFOSAA_00004		d3-NMeFOSAA	1 ug/mL
					LCd5-NEtFOSAA 00004		d5-NEtFOSAA	1 ug/mL
					LCM2-6:FTS_00004 LCM2-8:2FTS 00004		M2-6:2FTS M2-8:2FTS	0.95 ug/mL
LCd-NEtFOSA-M 00005	06/10/21	T-TT	LLINGTON, Lot dNEtFOSA06	1.04	(Purchased Reag		d-N-EtFOSA-M	0.958 ug/mL 50 ug/mL
LCd-NMeFOSA-M 00004	06/10/21		LLINGTON, LOT dNECFOSAU6		1		d-N-MeFOSA-M	50 ug/mL
LCd-NMeFOSA-M_00004	11/22/21		LLINGTON, Lot dNMeFOSAA		(Purchased Reagon) (Purchased Reagon)		d3-NMeFOSAA	50 ug/mL
LCd5-NMerOSAA_00004	11/22/21		LLINGTON, Lot d5NEtFOSAA		(Purchased Reag		d5-NMEFOSAA d5-NEtFOSAA	50 ug/mL
LCM2-6:FTS 00004	02/17/22		ELLINGTON, Lot M262FTS02		(Purchased Reag		M2-6:2FTS	47.5 ug/mL
LCM2-8:2FTS 00004	08/22/21		ELLINGTON, Lot M282FTS08		(Purchased Reag		M2-8:2FTS	47.9 ug/mL
.LCM2-0.2F13_00004	11/24/17		Methanol, Lot Baker		LCM2PFHxDA 00009		13C2-PFHxDA	1 ug/mL
. Herri 1 650_00005	11/24/17	03/24/17	141039	10000 41	_			
					LCM2PFTeDA 00008		13C2-PFTeDA	1 ug/mL
					LCM4PFHPA_00008		13C4-PFHpA	1 ug/mL
					LCM5PFPEA 00009		13C5 PFPeA	1 ug/mL
					LCM8FOSA 00012		13C8 FOSA	1 ug/mL
					LCMPFBA_00009		13C4 PFBA	1 ug/mL
					LCMPFDA_00013		13C2 PFDA	1 ug/mL
					LCMPFDoA_00009		13C2 PFDoA	1 ug/mL
					LCMPFHxA_00014		13C2 PFHxA	1 ug/mL
					LCMPFHxS_00009		1802 PFHxS	0.946 ug/mL
					LCMPFNA_00009 LCMPFOA_00013		13C5 PFNA 13C4 PFOA	1 ug/mL
					LCMPFOA_00013		13C4 PFOA	1 ug/mL 0.956 ug/mL
					LCMPFUS_00020		13C4 PFOS 13C2 PFUnA	
LCM2PFHxDA 00009	01/07/21	Welling+	 on Laboratories, Lot M2P	 P	(Purchased Reag		13C2 PFUNA 13C2-PFHxDA	1 ug/mL 50 ug/mL
LCM2PFHXDA 00009	12/07/20		on Laboratories, Lot M2P on Laboratories, Lot M2P		(Purchased Reag		13C2-PFHXDA 13C2-PFTeDA	50 ug/mL
LCM4PFHPA 00008	05/27/21		on Laboratories, Lot M2F		(Purchased Reag		13C4-PFHpA	50 ug/mL
LCM4FFHFA 00000	11/22/21		con Laboratories, Lot M51		(Purchased Reag		13C5 PFPeA	50 ug/mL
LCM8FOSA 00012	12/22/21		con Laboratories, Lot MSI		(Purchased Reag		13C8 FOSA	50 ug/mL
LCMPFBA 00009	05/24/21		gton Laboratories, Lot Mi		(Purchased Reag		13C4 PFBA	50 ug/mL
LCMPFDA 00013	09/30/21		ton Laboratories, Lot MI		(Purchased Reag		13C2 PFDA	50 ug/mL
_		-	· · · · · · · · · · · · · · · · · · ·					
LCMPFDoA 00009	04/08/21	Welling	ton Laboratories, Lot MP	FDoA0416	(Purchased Reag	ent)	13C2 PFDoA	50 ug/mL

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				Reagent	Parent Rea	gent		
	Exp	Prep	Dilutant	Final		Volume		
Reagent ID	Date	Date	Used	Volume	Reagent ID	Added	Analyte	Concentration
LCMPFHxS 00009	10/23/20	Welling	ton Laboratories, Lot MP	FHxS1015	(Purchased Re	eagent)	1802 PFHxS	47.3 ug/mL
LCMPFNA 00009	09/30/21	Welling	ton Laboratories, Lot ME	PFNA0916	(Purchased Re	eagent)	13C5 PFNA	50 ug/mL
LCMPFOA 00013	10/18/21	Welling	ton Laboratories, Lot ME	PFOA1016	(Purchased Re	eagent)	13C4 PFOA	50 ug/mL
LCMPFOS 00020	12/12/21	Welling	ton Laboratories, Lot ME	PFOS1216	(Purchased Re	eagent)	13C4 PFOS	47.8 ug/mL
LCMPFUdA 00010	11/22/21	Welling	ton Laboratories, Lot MP	FUdA1116	(Purchased Re	eagent)	13C2 PFUnA	50 ug/mL
.LCPFACMXB_00007	11/06/20	Wellingt	on Laboratories, Lot PFA	ACMXB1115	(Purchased Re	eagent)	Perfluorobutanesulfonic acid (PFBS)	1.77 ug/mL
							Perfluorobutanoic acid (PFBA)	2 ug/mL
							Perfluorodecanesulfonic acid (PFDS)	1.93 ug/mL
							Perfluorodecanoic acid (PFDA)	2 ug/mL
							Perfluorododecanoic acid (PFDoA)	2 ug/mL
							Perfluoroheptanoic acid (PFHpA)	2 ug/mL
							Perfluorohexanesulfonic acid (PFHxS)	1.89 ug/mL
							Perfluorohexanoic acid (PFHxA)	2 ug/mL
							Perfluorononanoic acid (PFNA)	2 ug/mL
							Perfluorooctanesulfonic acid (PFOS)	1.91 ug/mL
							Perfluorooctanoic acid (PFOA)	2 ug/mL
							Perfluoropentanoic acid (PFPeA)	2 ug/mL
							Perfluorotetradecanoic acid (PFTeA)	2 ug/mL
							Perfluorotridecanoic Acid (PFTriA)	2 ug/mL
							Perfluoroundecanoic acid (PFUnA)	2 ug/mL
.LCPFC3IM_00007	09/02/17	05/30/17	Methanol, Lot 090285	5 mL	LCPFHpS_00010		Perfluoroheptanesulfonic Acid (PFHpS)	952 ng/mL
					LCPFOSA_00009		Perfluorooctane Sulfonamide (FOSA)	1000 ng/mL
LCPFHpS_00010	11/06/20	_	ton Laboratories, Lot LP	_	(Purchased Re		Perfluoroheptanesulfonic Acid (PFHpS)	47.6 ug/mL
LCPFOSA_00009	09/02/17	Welling	ton Laboratories, Lot FC	DSA0815I	(Purchased Re	eagent)	Perfluorooctane Sulfonamide (FOSA)	50 ug/mL
LCPFCSP_00100	12/20/17	06/20/17	Methanol, Lot 090285	250 mL	LCPFBA 00006	100 uL	Perfluorobutanoic acid (PFBA)	0.02 ug/mL
-					LCPFBS 00006	100 uL	Perfluorobutane Sulfonate	0.01768 ug/mL
					_		Perfluorobutanesulfonic acid (PFBS)	0.01768 ug/mL
					LCPFDA 00006	100 uL	Perfluorodecanoic acid (PFDA)	0.02 ug/mL
					LCPFDoA_00006		Perfluorododecanoic acid (PFDoA)	0.02 ug/mL
					LCPFDS 00007	100 uL	Perfluorodecane Sulfonate	0.01928 ug/mL
					_		Perfluorodecanesulfonic acid (PFDS)	0.01928 ug/mL

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				Reagent	Parent Reage	ent		
	Exp	Prep	Dilutant	Final		Volume		
Reagent ID	Date	Date	Used	Volume	Reagent ID	Added	Analyte	Concentration
					LCPFHpA_00007	100 uL	Perfluoroheptanoic acid (PFHpA)	0.02 ug/mL
					LCPFHpS 00010	100 uL	Perfluoroheptane Sulfonate	0.01904 ug/mL
							Perfluoroheptanesulfonic Acid (PFHpS)	0.01904 ug/mL
					LCPFHxA_00006		Perfluorohexanoic acid (PFHxA)	0.02 ug/mL
					LCPFHxDA_00007		Perfluorohexadecanoic acid	0.02 ug/mL
					LCPFHxS-br_00003	100 uL	Perfluorohexane Sulfonate	0.0182 ug/mL
							Perfluorohexanesulfonic acid (PFHxS)	0.0182 ug/mL
					LCPFNA_00007		Perfluorononanoic acid (PFNA)	0.02 ug/mL
					LCPFOA_00007		Perfluorooctanoic acid (PFOA)	0.02 ug/mL
					LCPFODA_00007		Perfluorooctadecanoic acid	0.02 ug/mL
					LCPFOS-br_00003		Perfluorooctanesulfonic acid (PFOS)	0.01856 ug/mL
					LCPFOSA_00010		Perfluorooctane Sulfonamide (FOSA)	0.02 ug/mL
					LCPFPeA_00006		Perfluoropentanoic acid (PFPeA)	0.02 ug/mL
					LCPFTeDA_00007		Perfluorotetradecanoic acid (PFTeA)	0.02 ug/mL
					LCPFTrDA_00007		Perfluorotridecanoic Acid (PFTriA)	0.02 ug/mL
					LCPFUdA_00006	100 uL	Perfluoroundecanoic acid (PFUnA)	0.02 ug/mL
.LCPFBA_00006	05/27/21		gton Laboratories, Lot		(Purchased Rea		Perfluorobutanoic acid (PFBA)	50 ug/mL
.LCPFBS_00006	03/15/21	Welling	gton Laboratories, Lot	LPFBS0316	(Purchased Rea	gent)	Perfluorobutane Sulfonate	44.2 ug/mL
							Perfluorobutanesulfonic acid (PFBS)	44.2 ug/mL
.LCPFDA_00006	05/31/21	Wellin	gton Laboratories, Lot	PFDA0516	(Purchased Rea		Perfluorodecanoic acid (PFDA)	50 ug/mL
.LCPFDoA_00006	05/31/21		gton Laboratories, Lot		(Purchased Rea		Perfluorododecanoic acid (PFDoA)	50 ug/mL
.LCPFDS_00007	05/24/21	Welling	ton Laboratories, Lot	LPFDS0516	(Purchased Rea	gent)	Perfluorodecane Sulfonate	48.2 ug/mL
							Perfluorodecanesulfonic acid (PFDS)	48.2 ug/mL
.LCPFHpA_00007	01/22/21		gton Laboratories, Lot	_	(Purchased Rea		Perfluoroheptanoic acid (PFHpA)	50 ug/mL
.LCPFHpS_00010	11/06/20	Welling	ton Laboratories, Lot I	LPFHpS1115	(Purchased Rea	gent)	Perfluoroheptane Sulfonate	47.6 ug/mL
							Perfluoroheptanesulfonic Acid (PFHpS)	47.6 ug/mL
.LCPFHxA_00006	12/22/20		gton Laboratories, Lot	PFHxA1215	(Purchased Rea		Perfluorohexanoic acid (PFHxA)	50 ug/mL
.LCPFHxDA 00007	05/25/21		ton Laboratories, Lot E		(Purchased Rea		Perfluorohexadecanoic acid	50 ug/mL
.LCPFHxS-br_00003	07/03/20	Wellingt	on Laboratories, Lot br	CPFHxSK0615	(Purchased Rea	gent)	Perfluorohexane Sulfonate	45.5 ug/mL
							Perfluorohexanesulfonic acid (PFHxS)	45.5 ug/mL
.LCPFNA_00007	10/23/20		gton Laboratories, Lot		(Purchased Rea		Perfluorononanoic acid (PFNA)	50 ug/mL
.LCPFOA 00007	08/02/21		gton Laboratories, Lot		(Purchased Rea	J /	Perfluorooctanoic acid (PFOA)	50 ug/mL
.LCPFODA_00007 .LCPFOS-br 00003	04/29/21 10/14/20		gton Laboratories, Lot ton Laboratories, Lot b		(Purchased Rea (Purchased Rea		Perfluorooctadecanoic acid Perfluorooctanesulfonic acid	50 ug/mL 46.4 ug/mL

Lab	Name:	TestAmerica	Sacramento	Job No.: 320-29732-1

				Reagent	Parent Reage:	nt		
Reagent ID	Exp Date	Prep Date	Dilutant Used	Final Volume	Reagent ID	Volume Added	Analyte	Concentration
.LCPFOSA_00010	09/30/21	Welling	ton Laboratories, Lot	FOSA0916I	(Purchased Reag	gent)	Perfluorooctane Sulfonamide (FOSA)	50 ug/mL
.LCPFPeA_00006	05/31/21	Welling	ton Laboratories, Lot	PFPeA0516	(Purchased Reag	gent)	Perfluoropentanoic acid (PFPeA)	50 ug/mL
.LCPFTeDA_00007	09/30/21		ton Laboratories, Lot		(Purchased Reag	gent)	Perfluorotetradecanoic acid (PFTeA)	50 ug/mL
.LCPFTrDA_00007	02/12/21		ton Laboratories, Lot		(Purchased Reag		Perfluorotridecanoic Acid (PFTriA)	50 ug/mL
.LCPFUdA_00006	08/19/20	Welling	ton Laboratories, Lot	PFUdA0815	(Purchased Reag	gent)	Perfluoroundecanoic acid (PFUnA)	50 ug/mL
LCPFCSP_00110	01/21/18	07/21/17	Methanol, Lot 090285	250 mL	LC4:2FTS_00003		Sodium 1H,1H,2H,2H-perfluorohexane sulfonate (4:2)	0.01868 ug/mL
					LC6:2FTS_00003		Sodium 1H,1H,2H,2H-perfluorooctane sulfonate (6:2)	0.01896 ug/mL
					LC8:2FTS_00003		Sodium 1H,1H,2H,2H-perfluorodecane sulfonate (8:2)	0.01916 ug/mL
					LCN-EtFOSA-M_00004		N-ethylperfluoro-1-octanesulfo namide	
					LCN-EtFOSAA_00003	100 uL	N-ethyl perfluorooctane sulfonamidoacetic acid	0.02 ug/mL
					LCN-MeFOSA-M 00003	100 uL	MeFOSA	0.02 ug/mL
					LCN-MeFOSAA_00004	100 uL	N-methyl perfluorooctane sulfonamidoacetic acid	0.02 ug/mL
					LCPFBA_00006		Perfluorobutanoic acid (PFBA)	0.02 ug/mL
					LCPFBS_00006	100 uL	Perfluorobutane Sulfonate Perfluorobutanesulfonic acid (PFBS)	0.01768 ug/mL 0.01768 ug/mL
					LCPFDA 00007	100 uL	Perfluorodecanoic acid (PFDA)	0.02 ug/mL
					LCPFDoA_00007	100 uL	Perfluorododecanoic acid (PFDoA)	0.02 ug/mL
					LCPFDS_00007	100 uL	Perfluorodecane Sulfonate Perfluorodecanesulfonic acid (PFDS)	0.01928 ug/mL 0.01928 ug/mL
					LCPFHpA_00007	100 uL	Perfluoroheptanoic acid (PFHpA)	0.02 ug/mL
					LCPFHpS_00010	100 uL	Perfluoroheptane Sulfonate Perfluoroheptanesulfonic Acid (PFHpS)	0.01904 ug/mL 0.01904 ug/mL
					LCPFHxA 00006	100 117.	Perfluorohexanoic acid (PFHxA)	0.02 ug/mL
					LCPFHxDA 00007		Perfluorohexadecanoic acid	0.02 ug/mL
					LCPFHxS-br 00003		Perfluorohexane Sulfonate	0.0182 ug/mL
							Perfluorohexanesulfonic acid (PFHxS)	0.0182 ug/mL
					LCPFNA 00007	100 uL	Perfluorononanoic acid (PFNA)	0.02 ug/mL
					LCPFOA 00007		Perfluorooctanoic acid (PFOA)	0.02 ug/mL
					LCPFODA 00007		Perfluorooctadecanoic acid	0.02 ug/mL

Lab	Name:	TestAmerica	Sacrament	to Job No.: 320-29732-1

				Reagent	Parent Reage	ent		
	Exp	Prep	Dilutant	Final		Volume		
Reagent ID	Date	Date	Used	Volume	Reagent ID	Added	Analyte	Concentration
					LCPFOS-br_00003	100 uL	Perfluorooctanesulfonic acid (PFOS)	0.01856 ug/mL
					LCPFOSA_00010		Perfluorooctane Sulfonamide (FOSA)	0.02 ug/mL
					LCPFPeA_00006		Perfluoropentanoic acid (PFPeA)	0.02 ug/mL
					LCPFTeDA_00007		Perfluorotetradecanoic acid (PFTeA)	0.02 ug/mL
					LCPFTrDA_00007		Perfluorotridecanoic Acid (PFTriA)	0.02 ug/mL
					LCPFUdA_00006		Perfluoroundecanoic acid (PFUnA)	0.02 ug/mL
.LC4:2FTS_00003	12/12/21		WELLINGTON, Lot 42FTS121	L 6	(Purchased Rea		Sodium 1H,1H,2H,2H-perfluorohexane sulfonate (4:2)	46.7 ug/mL
.LC6:2FTS_00003	06/25/21		WELLINGTON, Lot 62FTS061		(Purchased Rea		Sodium 1H,1H,2H,2H-perfluorooctane sulfonate (6:2)	47.4 ug/mL
.LC8:2FTS_00003	08/22/21		WELLINGTON, Lot 82FTS081		(Purchased Rea		Sodium 1H,1H,2H,2H-perfluorodecane sulfonate (8:2)	47.9 ug/mL
.LCN-EtFOSA-M_00004	05/24/21	MI	ELLINGTON, Lot NEtFOSA05	16M	(Purchased Rea	-	N-ethylperfluoro-1-octanesulfo namide	50 ug/mL
.LCN-EtFOSAA_00003	09/30/21	M	ELLINGTON, Lot NEtFOSAA0	916	(Purchased Rea	igent)	N-ethyl perfluorooctane sulfonamidoacetic acid	50 ug/mL
.LCN-MeFOSA-M_00003	05/24/21		ELLINGTON, Lot NMeFOSA05		(Purchased Rea		MeFOSA	50 ug/mL
.LCN-MeFOSAA_00004	10/12/21		ELLINGTON, Lot NMeFOSAA0		(Purchased Rea		N-methyl perfluorooctane sulfonamidoacetic acid	50 ug/mL
.LCPFBA_00006	05/27/21		gton Laboratories, Lot B		(Purchased Rea		Perfluorobutanoic acid (PFBA)	50 ug/mL
.LCPFBS_00006	03/15/21	Welling	gton Laboratories, Lot L	PFBS0316	(Purchased Rea	igent)	Perfluorobutane Sulfonate Perfluorobutanesulfonic acid (PFBS)	44.2 ug/mL 44.2 ug/mL
.LCPFDA 00007	05/31/21	Wellin	gton Laboratories, Lot B	PFDA0516	(Purchased Rea	igent)	Perfluorodecanoic acid (PFDA)	50 ug/mL
.LCPFDoA_00007	05/31/21		gton Laboratories, Lot P		(Purchased Rea	,	Perfluorododecanoic acid (PFDoA)	50 ug/mL
.LCPFDS_00007	05/24/21	Welling	gton Laboratories, Lot L	PFDS0516	(Purchased Rea	igent)	Perfluorodecane Sulfonate Perfluorodecanesulfonic acid (PFDS)	48.2 ug/mL 48.2 ug/mL
.LCPFHpA_00007	01/22/21	Welling	gton Laboratories, Lot P	FHpA0116	(Purchased Rea	igent)	Perfluoroheptanoic acid (PFHpA)	50 ug/mL
.LCPFHpS_00010	11/06/20	Welling	ton Laboratories, Lot LE	PFHpS1115	(Purchased Rea	igent)	Perfluoroheptane Sulfonate Perfluoroheptanesulfonic Acid (PFHpS)	47.6 ug/mL 47.6 ug/mL
.LCPFHxA_00006	12/22/20		gton Laboratories, Lot P		(Purchased Rea	igent)	Perfluorohexanoic acid (PFHxA)	50 ug/mL
.LCPFHxDA_00007	05/25/21	Welling	ton Laboratories, Lot PA	FHXDA0516	(Purchased Rea		Perfluorohexadecanoic acid	50 ug/mL
.LCPFHxS-br_00003	07/03/20	Wellingt	on Laboratories, Lot br	PFHxSK0615	(Purchased Rea	igent)	Perfluorohexane Sulfonate	45.5 ug/mL
							Perfluorohexanesulfonic acid (PFHxS)	45.5 ug/mL
.LCPFNA_00007	10/23/20		gton Laboratories, Lot B		(Purchased Rea		Perfluorononanoic acid (PFNA)	50 ug/mL
.LCPFOA_00007	08/02/21	Wellin	gton Laboratories, Lot H	PFOA0716	(Purchased Rea	igent)	Perfluorooctanoic acid (PFOA)	50 ug/mL

Lab	Name:	TestAmerica	Sacramento	Job No.:	320-29732-1
SDG	No.:				

				Reagent	Parent Reager	nt		
Reagent ID	Exp Date	Prep Date	Dilutant Used	Final Volume	Reagent ID	Volume Added	Analyte	Concentration
.LCPFODA 00007	04/29/21	Welling	ton Laboratories, Lot PE	FODA0416	(Purchased Reag	ent)	Perfluorooctadecanoic acid	50 ug/mL
.LCPFOS-br_00003	10/14/20	.0/14/20 Wellington Laboratories, Lot brPFOSK1015			(Purchased Reagent)		Perfluorooctanesulfonic acid (PFOS)	46.4 ug/mL
.LCPFOSA_00010	09/30/21	09/30/21 Wellington Laboratories, Lot FOSA0916I			(Purchased Reagent)		Perfluorooctane Sulfonamide (FOSA)	50 ug/mL
.LCPFPeA_00006	05/31/21	Welling	ton Laboratories, Lot PF	FPeA0516	(Purchased Reag	ent)	Perfluoropentanoic acid (PFPeA)	50 ug/mL
.LCPFTeDA_00007	09/30/21	Welling	ton Laboratories, Lot PF	TeDA0916	(Purchased Reag	ent)	Perfluorotetradecanoic acid (PFTeA)	50 ug/mL
.LCPFTrDA_00007	02/12/21	Welling	ton Laboratories, Lot PF	TrDA0216	(Purchased Reag	ent)	Perfluorotridecanoic Acid (PFTriA)	50 ug/mL
.LCPFUdA_00006	08/19/20	Welling	ton Laboratories, Lot PF	FUdA0815	(Purchased Reag	ent)	Perfluoroundecanoic acid (PFUnA)	50 ug/mL

Reagent

LC4:2FTS_00002



CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE:

4:2FTS

LOT NUMBER:

42FTS1216

COMPOUND:

Sodium 1H,1H,2H,2H-perfluorohexane sutfonate

STRUCTURE:

CAS #:

Not available

MOLECULAR FORMULA:

C,H,F,SO,Na

 $46.7 \pm 2.3 \,\mu g/ml$

MOLECULAR WEIGHT:

350.13

CONCENTRATION:

 $50.0 \pm 2.5 \,\mu g/ml$ (Na salt)

(4:2FTS anion)

SOLVENT(S):

Methanol

CHEMICAL PURITY:

>98%

LAST TESTED: (mm/dd/yyyy)

12/12/2016

EXPIRY DATE: (mm/dd/yyyy)

12/12/2021

RECOMMENDED STORAGE:

Refrigerate ampoule

DOCUMENTATION/ DATA ATTACHED:

Figure 1: LC/MS Data (TIC and Mass Spectrum)

Figure 2: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

See page 2 for further details.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By:

Date: 12/21/2016 (mm/dd/yyyy)

Wellington Laboratories Inc., 345 Southgate Dr. Guelph ON N1G 3M5 CANADA 519-822-2436 • Fax: 519-822-2849 • Info@well-labs.com

The products prepared by Wellington Laboratories Inc. are for laboratory use only. This certified reference material (CRM) was designed to be used as a standard for the identification and/or quantification of the specific chemical compound it contains.

HAZARDS:

This product should only be used by qualified personnel familiar with its potential hazards and trained in the handling of hazardous chemicals. Due care should be exercised to prevent unnecessary human contact or ingestion. All procedures should be carried out in a well-functioning fume hood and suitable gloves, eye protection, and clothing should be worn at all times. Waste should be disposed of according to national and regional regulations. Safety Data Sheets (SDSs) are available upon request.

SYNTHESIS / CHARACTERIZATION:

Where possible, all of our products are synthesized using single-product unambiguous routes. They are then characterized, and their structures and purities confirmed, using a combination of the most relevant techniques, such as NMR, GC/MS, LC/MS/MS, SFC/UV/MS/MS, x-ray crystallography, and melting point. Isotopic purities of mass-labelled compounds are also confirmed using HRGC/HRMS and/or LC/MS/MS.

HOMOGENEITY:

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UNCERTAINTY:

The maximum combined relative standard uncertainty of our reference standard solutions is calculated using the following equation:

The combined relative standard uncertainty, $u_{s}(y)$, of a value y and the uncertainty of the independent parameters

 $x_1, x_2...x_n$ on which it depends is:

$$u_c(y(x_1, x_2, ...x_n)) = \sqrt{\sum_{i=1}^n u(y, x_i)^2}$$

where x is expressed as a relative standard uncertainty of the individual parameter.

The individual uncertainties taken into account include those associated with weights (calibration of the balance) and volumes (calibration of the volumetric glassware). An expanded maximum combined percent relative uncertainty of $\pm 5\%$ (calculated with a coverage factor of 2 and a level of confidence of 95%) is stated on the Certificate of Analysis for all of our products.

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EXPIRY DATE / PERIOD OF VALIDITY:

Ongoing stability studies of this product have demonstrated stability in its composition and concentration, until the specified expiry date, in the unopened ampoule. Monitoring for any degradation or change in concentration of the listed analyte(s) is performed on a routine basis,

LIMITED WARRANTY:

At the time of shipment, all products are warranted to be free of defects in material and workmanship and to conform to the stated technical and purity specifications.

QUALITY MANAGEMENT:

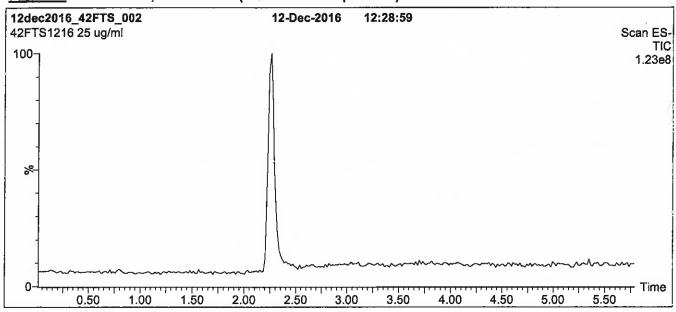
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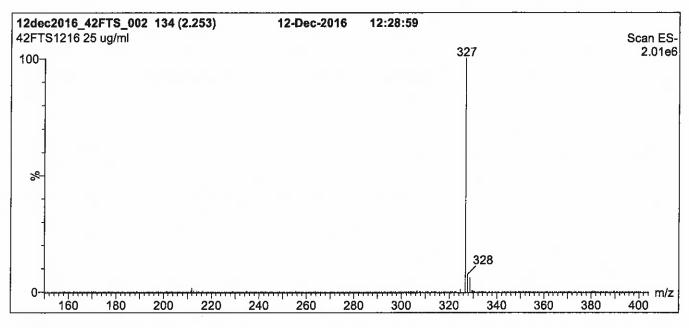




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Figure 1: 4:2FTS; LC/MS Data (TIC and Mass Spectrum)





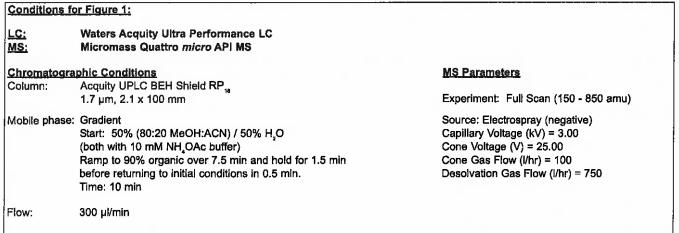
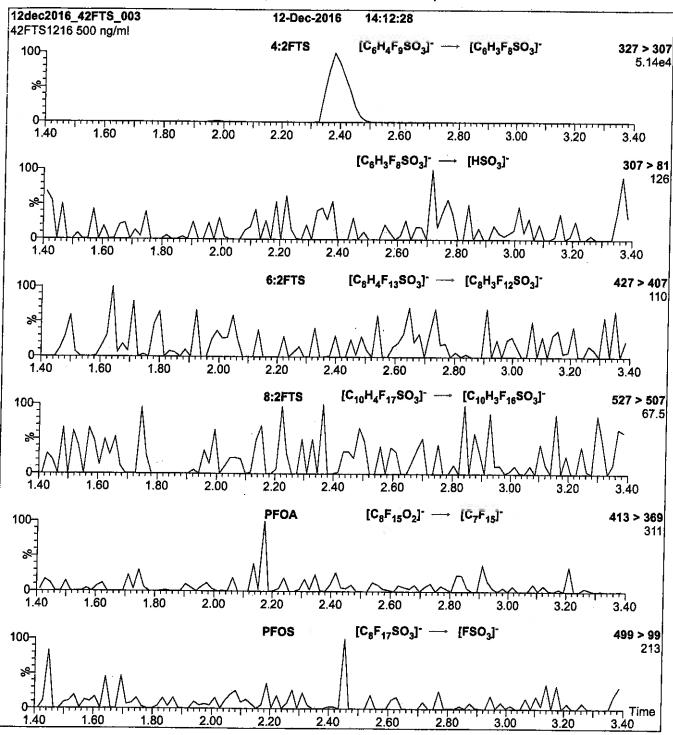


Figure 2: 4:2FTS; LC/MS/MS Data (Selected MRM Transitions)





Injection:

Direct loop injection

10 µl (500 ng/ml 4:2FTS)

Mobile phase: Isocratic 80% (80:20 MeOH:ACN) / 20% H₂O

(both with 10 mM NH OAc buffer)

Flow:

300 µl/min

MS Parameters

Collision Gas (mbar) = 3.31e-3 Collision Energy (eV) = 25

Reagent

LC4:2FTS_00003



CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE:

4:2FTS

LOT NUMBER:

42FTS1216

COMPOUND:

Sodium 1H,1H,2H,2H-perfluorohexane sulfonate

STRUCTURE:

CAS #:

Not available

MOLECULAR FORMULA:

C₈H₄F₈SO₃Na

MOLECULAR WEIGHT:

350.13

CONCENTRATION:

 $50.0 \pm 2.5 \,\mu g/ml$

 $46.7 \pm 2.3 \, \mu g/ml$

(Na salt)

(4:2FTS anion)

SOLVENT(S):

Methanol

CHEMICAL PURITY:

>98%

LAST TESTED: (mm/dd/yyyy)

12/12/2016

EXPIRY DATE: (mm/dd/yyyy)

12/12/2021

RECOMMENDED STORAGE:

Refrigerate ampoule

DOCUMENTATION/ DATA ATTACHED:

Figure 1: LC/MS Data (TIC and Mass Spectrum)

Figure 2: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

See page 2 for further details.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By:

Date: 12/21/2016

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$$x_1, x_2, ... x_n$$
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LIMITED WARRANTY:

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QUALITY MANAGEMENT:

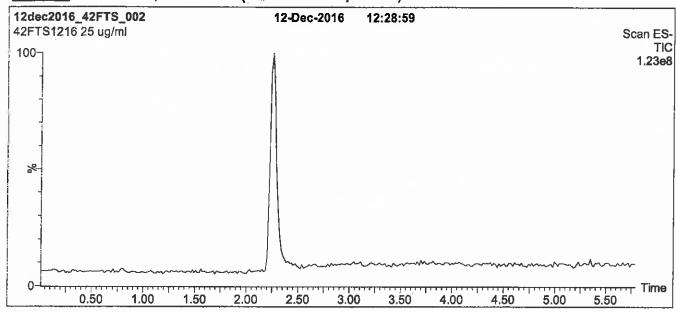
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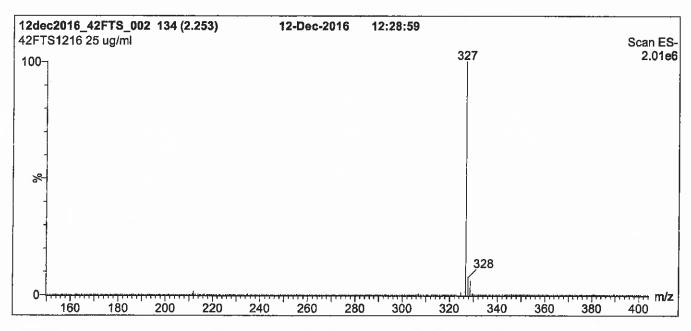




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Figure 1: 4:2FTS; LC/MS Data (TIC and Mass Spectrum)





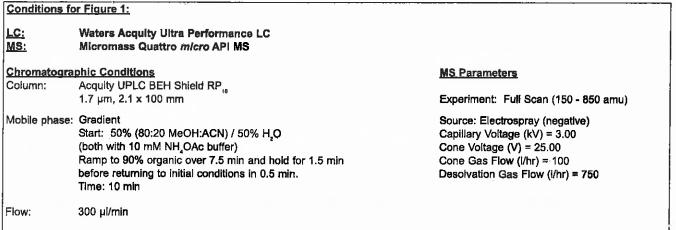
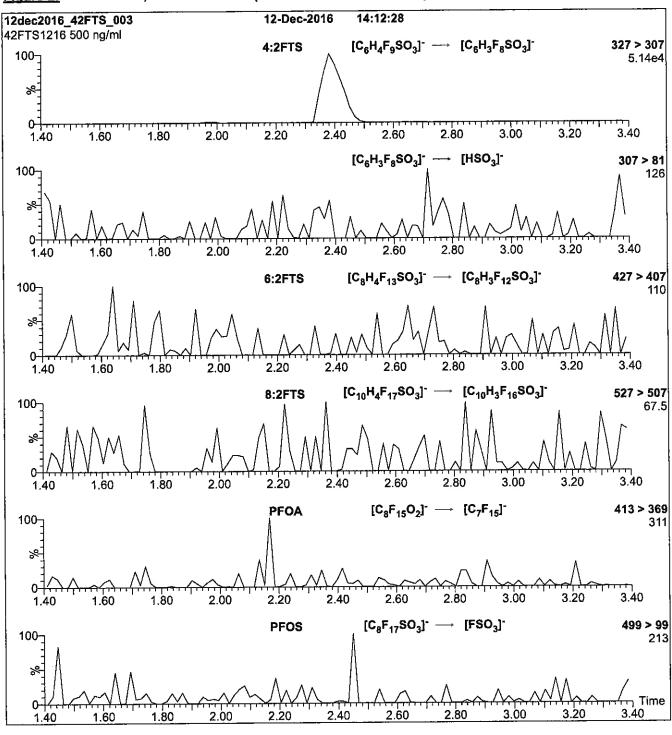
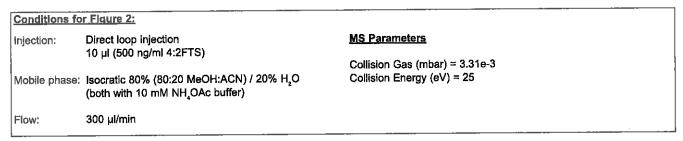


Figure 2: 4:2FTS; LC/MS/MS Data (Selected MRM Transitions)





Reagent

LC6:2FTS_00002

R: 8/23/16 SEC



ID: LC6:2FTS_00002 Exp: 05/25/21 Prpd; SBC



CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE:

6:2FTS

LOT NUMBER:

62FTS0616

COMPOUND:

Sodium 1H,1H,2H,2H-perfluorooctane sulfonate

STRUCTURE:

CAS #:

Not available

MOLECULAR FORMULA:

C_aH₄F₁₃SO₃Na

MOLECULAR WEIGHT:

450.15

CONCENTRATION:

 $50.0 \pm 2.5 \,\mu g/ml$

(Na salt) SOLVENT(S): Methanol

47.4 ± 2.4 µg/ml >98%

(6:2FTS anion)

CHEMICAL PURITY:

LAST TESTED: (mm/dd/yyyy)

06/25/2016

EXPIRY DATE: (mm/dd/yyyy)

06/25/2021

RECOMMENDED STORAGE:

Refrigerate ampoule

DOCUMENTATION/ DATA ATTACHED:

Figure 1: LC/MS Data (TiC and Mass Spectrum)

Figure 2: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

See page 2 for further details.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By:

Date: 06/29/2016

INTENDED USE:

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EXPIRY DATE / PERIOD OF VALIDITY:

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LIMITED WARRANTY:

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QUALITY MANAGEMENT:

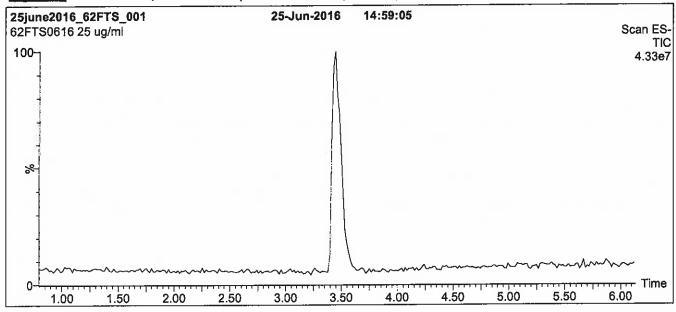
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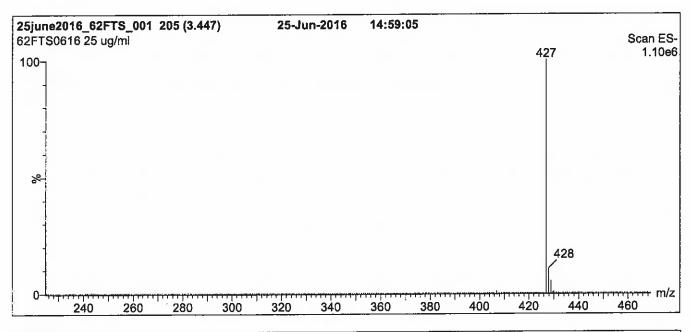




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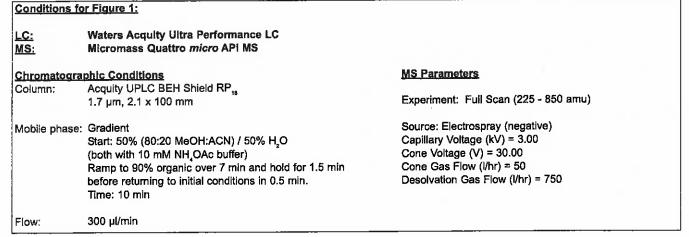
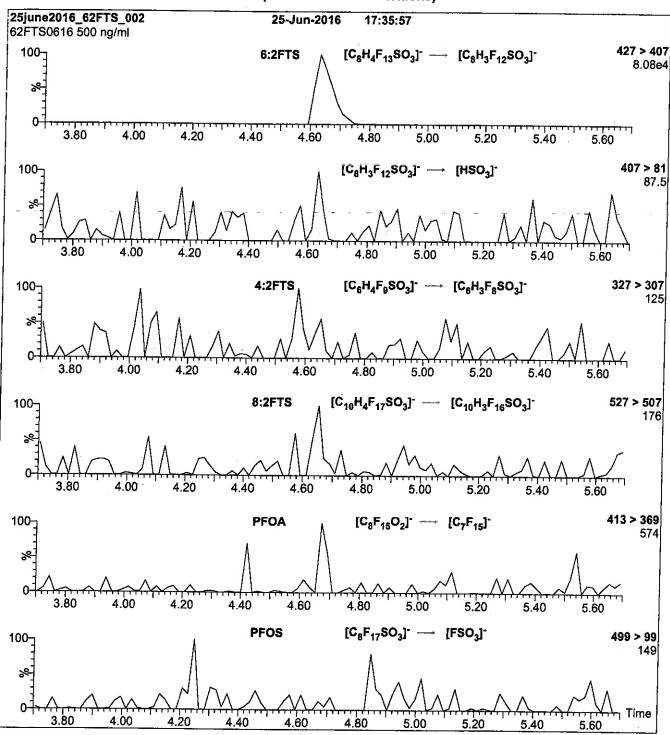
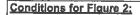


Figure 2: 6:2FTS; LC/MS/MS Data (Selected MRM Transitions)





Injection:

Flow:

Direct loop Injection

10 µl (500 ng/ml 6:2FTS)

Mobile phase: Isocratic 80% (80:20 MeOH:ACN) / 20% H₂O

(both with 10 mM NH₄OAc buffer)

300 µl/min

MS Parameters

Collision Gas (mbar) = 3.46e-3 Collision Energy (eV) = 25

Reagent

LC6:2FTS_00003



CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE:

6:2FTS

LOT NUMBER:

62FTS0616

COMPOUND:

Sodium 1H,1H,2H,2H-perfluorooctane sulfonate

STRUCTURE:

CAS #:

Not available

MOLECULAR FORMULA:

C_BH₄F₁₃SO₃Na

47.4 ± 2.4 µg/ml

MOLECULAR WEIGHT:

450.15

CONCENTRATION:

 $50.0 \pm 2.5 \,\mu g/ml$ (Na salt) SOLVENT(S):

Methanol

CHEMICAL PURITY:

>98%

LAST TESTED: (mm/dd/yyyy)

06/25/2016

EXPIRY DATE: (mm/dd/yyyy)

06/25/2021

RECOMMENDED STORAGE:

Refrigerate ampoule

DOCUMENTATION/ DATA ATTACHED:

Figure 1: LC/MS Data (TIC and Mass Spectrum)

Figure 2: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

See page 2 for further details.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

(6:2FTS anion)

Certified By:

Date: 06/29/2016

Wellington Laboratories Inc., 345 Southgate Dr. Guelph ON N1G 3M5 CANADA 519-822-2436 • Fax: 519-822-2849 • info@well-labs.com

INTENDED USE:

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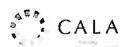
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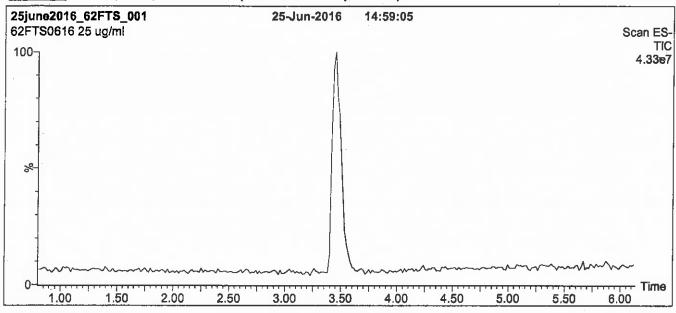
This product was produced using a Quality Management System registered to the latest versions of ISO 9001 by SAI Global, ISO/IEC 17025 by the Canadian Association for Laboratory Accreditation Inc. (CALA; A 1226), and ISO GUIDE 34 by ANSI-ASQ National Accreditation Board (ANAB; AR-1523).

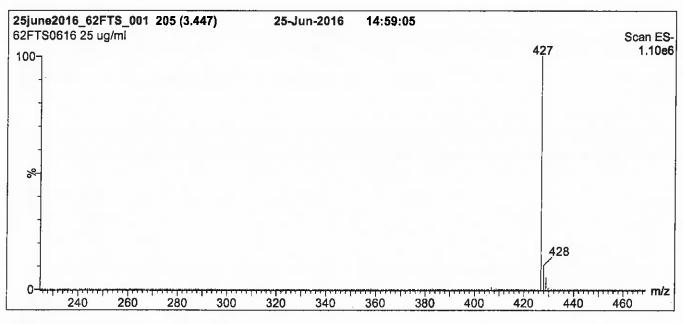




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Figure 1: 6:2FTS; LC/MS Data (TIC and Mass Spectrum)





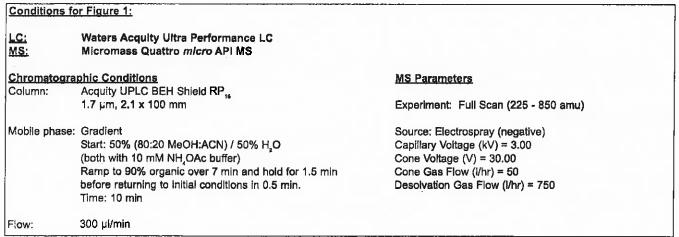
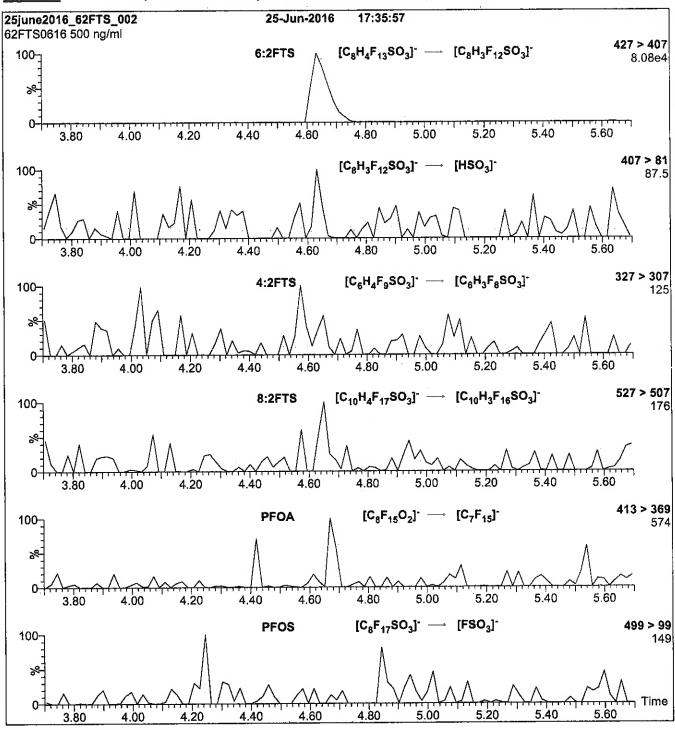
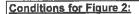


Figure 2: 6:2FTS; LC/MS/MS Data (Selected MRM Transitions)





Injection:

Direct loop injection

10 μl (500 ng/ml 6:2FTS)

Mobile phase: Isocratic 80% (80:20 MeOH:ACN) / 20% H₂O

(both with 10 mM NH,OAc buffer)

Flow:

300 µl/min

MS Parameters

Collision Gas (mbar) = 3.46e-3 Collision Energy (eV) = 25

Reagent

LC8:2FTS_00002

R: 8/23/16 880





CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE:

8:2FTS

LOT NUMBER:

82FTS1015

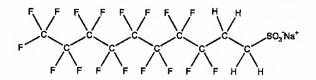
COMPOUND:

Sodium 1H,1H,2H,2H-perfluorodecane sulfonate

STRUCTURE:

CAS #:

Not available



(Na salt)

(8:2FTS anion)

MOLECULAR FORMULA:

C₁₀H₄F₁₇SO₃Na

MOLECULAR WEIGHT:

550.16

CONCENTRATION:

 $50.0 \pm 2.5 \,\mu\text{g/ml}$ $47.9 \pm 2.4 \,\mu\text{g/ml}$ SOLVENT(S):

Methanol

CHEMICAL PURITY:

>98%

LAST TESTED: (mm/dd/yyyy)

10/23/2015

EXPIRY DATE: (mm/dd/yyyy)

10/23/2020

RECOMMENDED STORAGE:

Refrigerate ampoule

DOCUMENTATION/ DATA ATTACHED:

Figure 1: LC/MS Data (TIC and Mass Spectrum)

Figure 2: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

See page 2 for further details.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By:

B.G. Chittim

Date:

10/27/2015

Wellington Laboratories Inc., 345 Southgate Dr. Guelph ON N1G 3M5 CANADA 519-822-2436 • Fax: 519-822-2849 • info@well-labs.com

INTENDED USE:

The products prepared by Wellington Laboratories Inc. are for laboratory use only. This certified reference material (CRM) was designed to be used as a standard for the identification and/or quantification of the specific chemical compound it contains.

HAZARDS:

This product should only be used by qualified personnel familiar with its potential hazards and trained in the handling of hazardous chemicals. Due care should be exercised to prevent unnecessary human contact or ingestion. All procedures should be carried out in a well-functioning fume hood and suitable gloves, eye protection, and clothing should be worn at all times. Waste should be disposed of according to national and regional regulations. Safety Data Sheets (SDSs) are available upon request.

SYNTHESIS / CHARACTERIZATION:

Where possible, all of our products are synthesized using single-product unambiguous routes. They are then characterized, and their structures and purities confirmed, using a combination of the most relevant techniques, such as NMR, GC/MS, LC/MS/MS, SFC/UV/MS/MS, x-ray crystallography, and melting point. Isotopic purities of mass-labelled compounds are also confirmed using HRGC/HRMS and/or LC/MS/MS.

HOMOGENEITY:

Prior to solution preparation, crystalline material is tested for homogeneity using a variety of techniques (as stated above) and its solubility in a given diluent is taken into consideration. Duplicate solutions of a new product are prepared from the same crystalline lot and, after the addition of an appropriate internal standard, they are compared by GC/MS, LC/MS/MS and/or SFC/UV/MS/MS. The relative response factors of the analyte of interest in each solution are required to be <5% RSD. New solution lots of existing products are compared to older lots in the same manner, which further confirms the homogeneity of the crystalline material as well as the stability and homogeneity of the solutions in the storage containers.

UNCERTAINTY:

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The combined relative standard uncertainty, $u_{c}(y)$, of a value y and the uncertainty of the independent parameters

 $X_1, X_2, ... X_n$ on which it depends is:

$$u_c(y(x_1, x_2, ...x_n)) = \sqrt{\sum_{i=1}^n u(y, x_i)^2}$$

where x is expressed as a relative standard uncertainty of the individual parameter.

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TRACEABILITY:

All reference standard solutions are traceable to specific crystalline lots. The microbalances used for solution preparation are regularly tested by an external ISO/IEC 17025 accredited calibration company. In addition, their calibration is verified prior to each weighing using NIST and/or NRC traceable external weights. All volumetric glassware used is of Class A tolerance and has been tested according to the appropriate ASTM procedures, which are ultimately traceable to NIST. For certain products, traceability to international interlaboratory studies has also been established.

EXPIRY DATE / PERIOD OF VALIDITY:

Ongoing stability studies of this product have demonstrated stability in its composition and concentration, until the specified expiry date, in the unopened ampoule. Monitoring for any degradation or change in concentration of the listed analyte(s) is performed on a routine basis.

LIMITED WARRANTY:

At the time of shipment, all products are warranted to be free of defects in material and workmanship and to conform to the stated technical and purity specifications.

QUALITY MANAGEMENT:

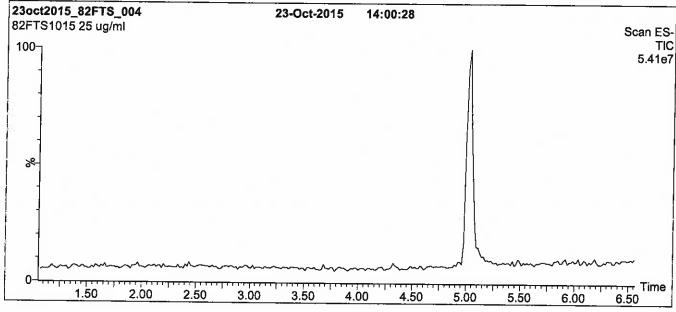
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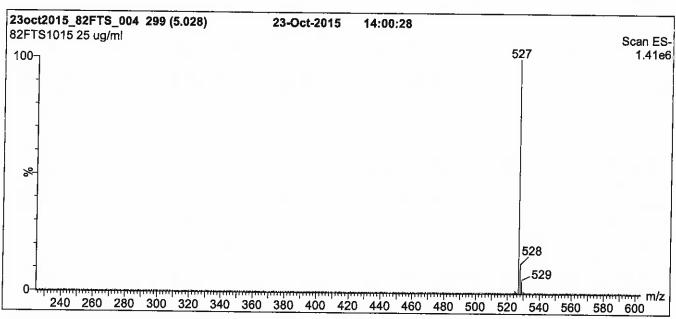


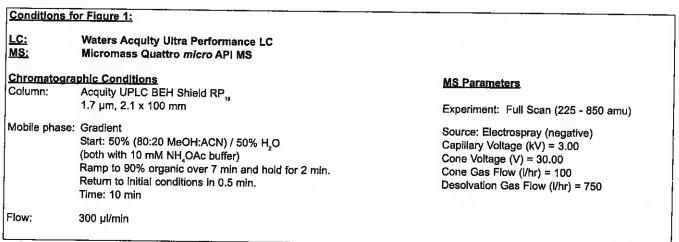


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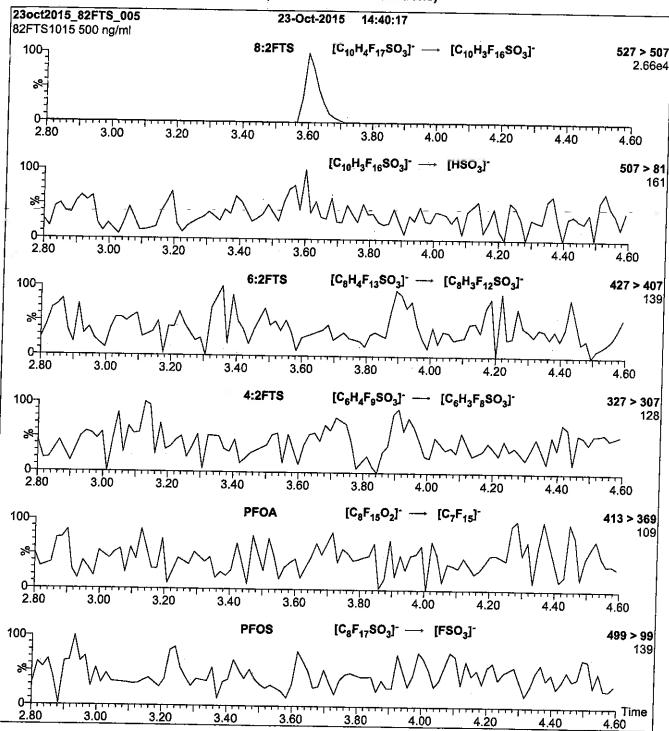
Figure 1: 8:2FTS; LC/MS Data (TIC and Mass Spectrum)

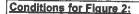






8:2FTS; LC/MS/MS Data (Selected MRM Transitions) Figure 2:





Injection:

Direct loop injection

10 µl (500 ng/ml 8:2FTS)

Mobile phase: Isocratic 80% (80:20 MeOH:ACN) / 20% H₂O (both with 10 mM NH₄OAc buffer)

MS Parameters

Collision Gas (mbar) = 3.28e-3 Collision Energy (eV) = 30

Flow:

300 µl/min

LC8:2FTS_00003



PRODUCT CODE:

8:2FTS

LOT NUMBER:

82FTS0816

COMPOUND:

-

Sodium 1H,1H,2H,2H-perfluorodecane sulfonate

STRUCTURE:

CAS #:

Not available

(8:2FTS anion)

MOLECULAR FORMULA:

C₁₀H₄F₁₇SO₃Na

47.9 ± 2.4 µg/ml

MOLECULAR WEIGHT:

550.16

CONCENTRATION:

 $50.0 \pm 2.5 \,\mu g/ml$ (Na salt)

SOLVENT(S):

Methanol

CHEMICAL PURITY:

>98%

LAST TESTED: (mm/dd/yyyy)

08/22/2016

EXPIRY DATE; (mm/dd/yyyy)

08/22/2021

RECOMMENDED STORAGE:

Refrigerate ampoule

DOCUMENTATION/ DATA ATTACHED:

Figure 1: LC/MS Data (TIC and Mass Spectrum)

Figure 2: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

See page 2 for further details.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By:

Date: <u>08/25/2016</u> (mm/dd/yyyy)

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$$x_1, x_2, ... x_n$$
 on which it depends is:

$$u_{\epsilon}(y(x_1, x_2, ... x_n)) = \sqrt{\sum_{i=1}^{n} u(y, x_i)^2}$$

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EXPIRY DATE / PERIOD OF VALIDITY:

Ongoing stability studies of this product have demonstrated stability in its composition and concentration, until the specified expiry date, in the unopened ampoule. Monitoring for any degradation or change in concentration of the listed analyte(s) is performed on a routine basis.

LIMITED WARRANTY;

At the time of shipment, all products are warranted to be free of defects in material and workmanship and to conform to the stated technical and purity specifications.

QUALITY MANAGEMENT:

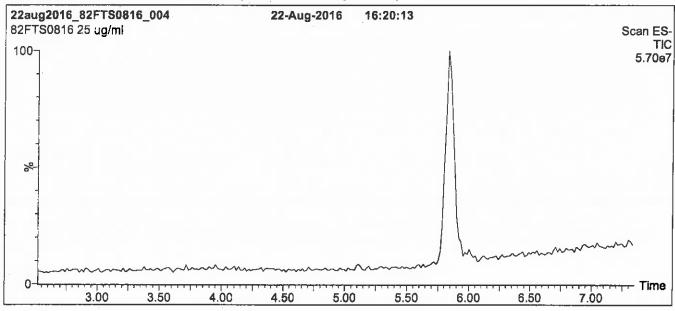
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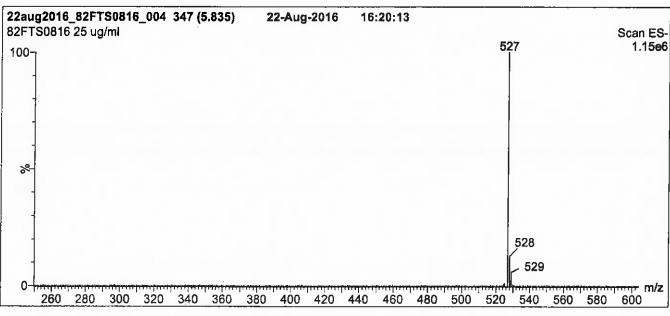


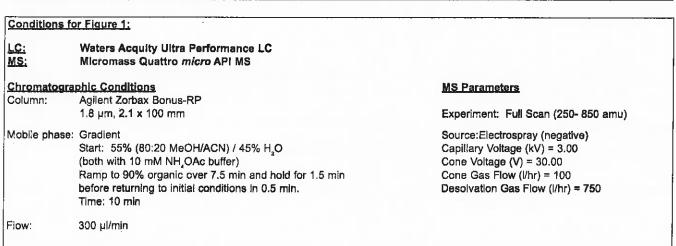


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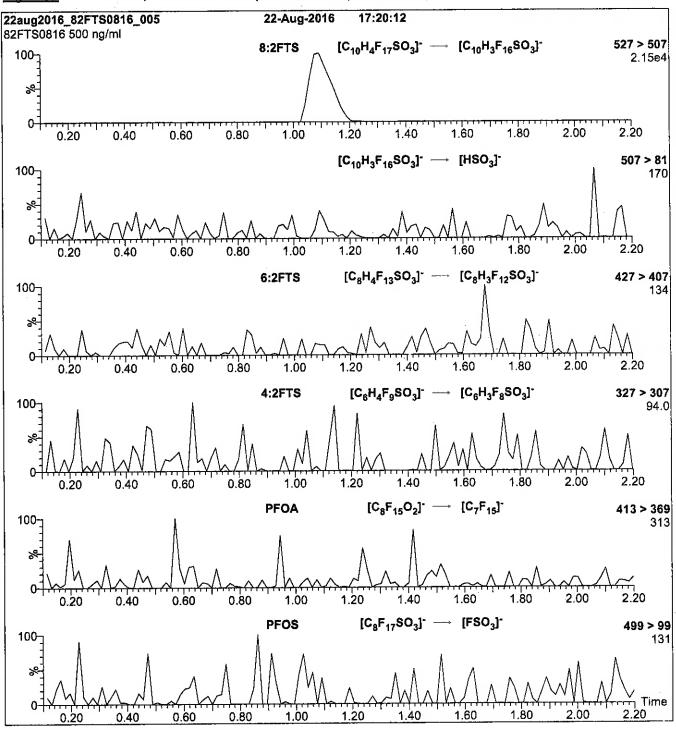
Figure 1: 8:2FTS; LC/MS Data (TIC and Mass Spectrum)







8:2FTS; LC/MS/MS Data (Selected MRM Transitions) Figure 2:





Injection:

Direct loop injection

10 µl (500 ng/ml 8:2FTS)

Mobile phase: Isocratic 80% (80:20 MeOH:ACN) / 20% H₂O

(both with 10 mM NH,OAc buffer)

MS Parameters

Collision Gas (mbar) = 3.31e-3 Collision Energy (eV) = 30

Flow:

300 µl/min

LCd-NEtFOSA-M_00005



PRODUCT CODE:

d-N-EtFOSA-M

LOT NUMBER:

dNEtFOSA0616M

COMPOUND:

N-ethyl-d_s-perfluoro-1-octanesulfonamide

STRUCTURE:

CAS #:

Not available

MOLECULAR FORMULA:

C,D,HF,,NO,S

CONCENTRATION:

 $50 \pm 2.5 \, \mu g/ml$

CHEMICAL PURITY:

>98%

LAST TESTED: (mm/dd/yyw)

06/10/2016

EXPIRY DATE: (mm/dd/yyyy)

06/10/2021

RECOMMENDED STORAGE:

Store ampoule in a cool, dark place

MOLECULAR WEIGHT:

SOLVENT(S):

532.23 Methanol

ISOTOPIC PURITY:

≥98% ²H_c

DOCUMENTATION/ DATA ATTACHED:

Figure 1: LC/MS Data (TIC and Mass Spectrum)

Figure 2: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

See page 2 for further details.

Contains ~ 0.5% of N-methyl-d_-perfluoro-1-octanesulfonamide (d-N-MeFOSA).

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By:

Date: 07/14/2016

Wellington Laboratories Inc., 345 Southgate Dr. Guelph ON N1G 3M5 CANADA 519-822-2436 • Fax: 519-822-2849 • info@well-labs.com

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EXPIRY DATE / PERIOD OF VALIDITY:

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LIMITED WARRANTY:

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QUALITY MANAGEMENT:

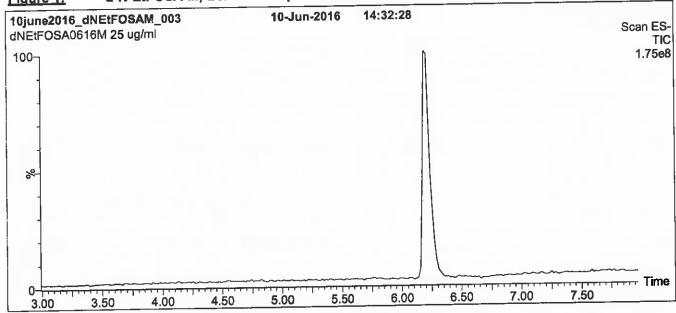
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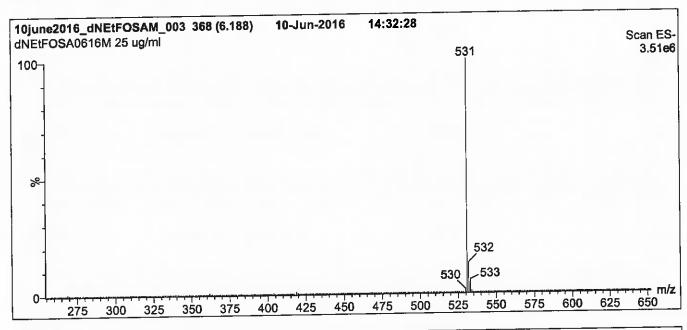




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Figure 1: d-N-EtFOSA-M; LC/MS Data (TIC and Mass Spectrum)





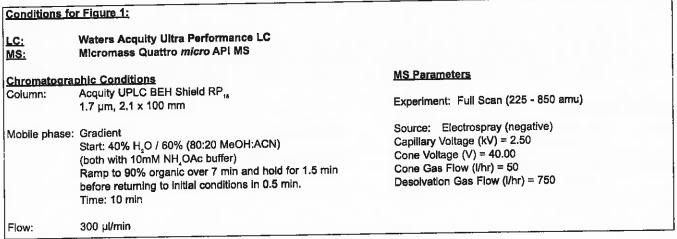
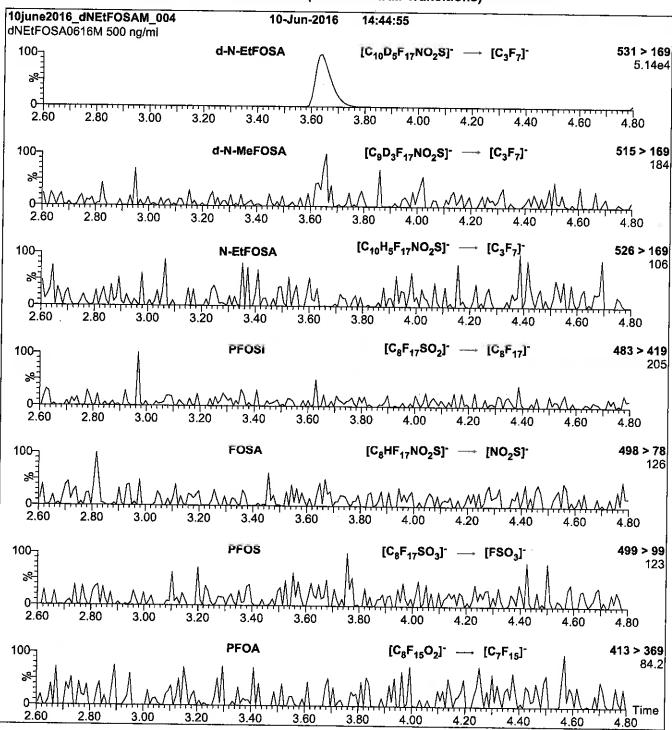
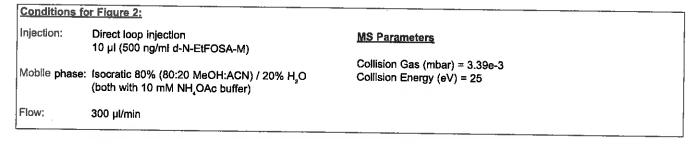


Figure 2: d-N-EtFOSA-M; LC/MS/MS Data (Selected MRM Transitions)





LCd-NMeFOSA-M_00004



PRODUCT CODE:

d-N-MeFOSA-M

LOT NUMBER:

MOLECULAR WEIGHT:

SOLVENT(S):

ISOTOPIC PURITY:

dNMeFOSA0616M

516.19

Methanol

≥98% ²H₄

COMPOUND:

N-methyl-d₃-perfluoro-1-octanesulfonamide

STRUCTURE:

CAS#:

Not available

MOLECULAR FORMULA:

C,D,HF,,NO,S

CONCENTRATION:

 $50 \pm 2.5 \,\mu g/ml$

CHEMICAL PURITY:

>98%

LAST TESTED: (mm/dd/yyyy)

06/10/2016

EXPIRY DATE: (mm/dd/yyyy)

06/10/2021

RECOMMENDED STORAGE:

Store ampoule in a cool, dark place

DOCUMENTATION/ DATA ATTACHED:

Figure 1: LC/MS Data (TIC and Mass Spectrum)

Figure 2: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

See page 2 for further details.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By:

Date: 06/16/2016

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LIMITED WARRANTY:

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QUALITY MANAGEMENT:

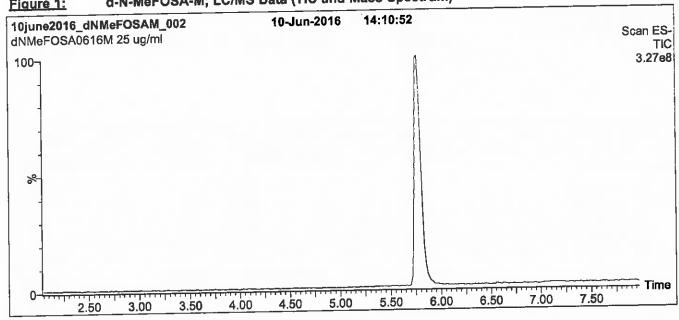
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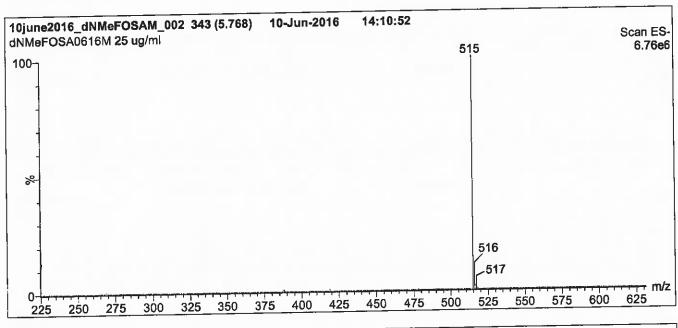




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Figure 1: d-N-MeFOSA-M; LC/MS Data (TIC and Mass Spectrum)





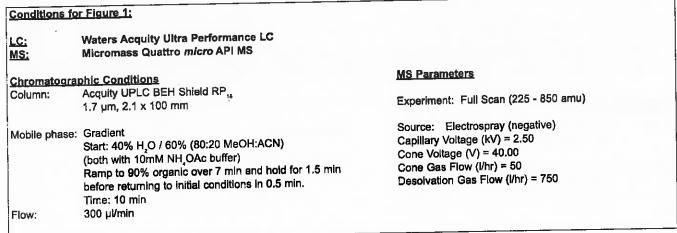
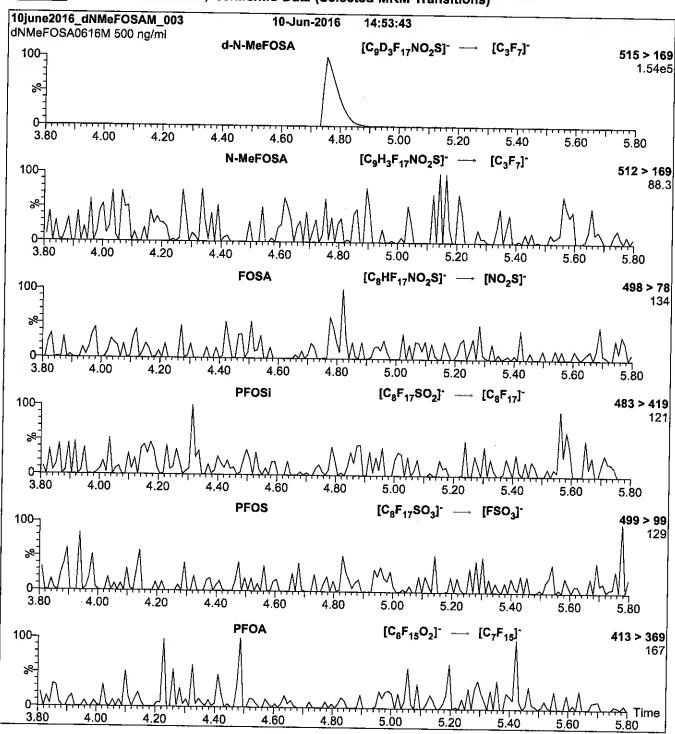
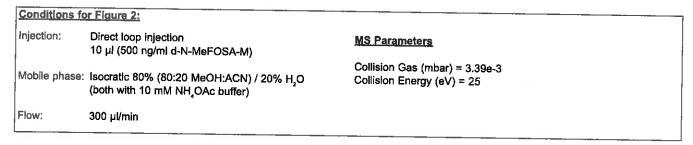


Figure 2: d-N-MeFOSA-M; LC/MS/MS Data (Selected MRM Transitions)





LCd3-NMeFOSAA_00004



PRODUCT CODE:

d3-N-MeFOSAA

LOT NUMBER:

d3NMeFOSAA1116

COMPOUND:

N-methyl-d3-perfluoro-1-octanesulfonamidoacetic acid

STRUCTURE:

CAS #:

Not available

MOLECULAR FORMULA:

C,D,H,F,,NO,S

574.23

CONCENTRATION:

 $50 \pm 2.5 \mu g/ml$

MOLECULAR WEIGHT: SOLVENT(S):

Methanol

CHEMICAL PURITY:

>98%

LAST TESTED: (mm/dd/yyyy) EXPIRY DATE: (mm/dd/yyyy)

11/22/2016 11/22/2021

RECOMMENDED STORAGE:

Refrigerate ampoule

ISOTOPIC PURITY:

Water (<1%) ≥98% ²H,

DOCUMENTATION/ DATA ATTACHED:

Figure 1: LC/MS Data (TIC and Mass Spectrum)

Figure 2: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

See page 2 for further details.

Contains 4 mole eq. of NaOH to prevent the conversion of the acetic acid molety to the methyl ester.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By:

Date:

Wellington Laboratories Inc., 345 Southgate Dr. Guelph ON N1G 3M5 CANADA 519-822-2436 • Fax: 519-822-2849 • info@well-labs.com

The products prepared by Wellington Laboratories Inc. are for laboratory use only. This certified reference material (CRM) was designed to be used as a standard for the identification and/or quantification of the specific chemical compound it contains.

HAZARDS:

This product should only be used by qualified personnel familiar with its potential hazards and trained in the handling of hazardous chemicals. Due care should be exercised to prevent unnecessary human contact or ingestion. All procedures should be carried out in a well-functioning fume hood and suitable gloves, eye protection, and clothing should be worn at all times. Waste should be disposed of according to national and regional regulations. Safety Data Sheets (SDSs) are available upon request.

SYNTHESIS / CHARACTERIZATION:

Where possible, all of our products are synthesized using single-product unambiguous routes. They are then characterized, and their structures and purities confirmed, using a combination of the most relevant techniques, such as NMR, GC/MS, LC/MS/MS, SFC/UV/MS/MS, x-ray crystallography, and melting point. Isotopic purities of mass-labelled compounds are also confirmed using HRGC/HRMS and/or LC/MS/MS.

HOMOGENEITY:

Prior to solution preparation, crystalline material is tested for homogeneity using a variety of techniques (as stated above) and its solubility in a given diluent is taken into consideration. Duplicate solutions of a new product are prepared from the same crystalline lot and, after the addition of an appropriate internal standard, they are compared by GC/MS, LC/MS/MS and/or SFC/UV/MS/MS. The relative response factors of the analyte of interest in each solution are required to be <5% RSD. New solution lots of existing products are compared to older lots in the same manner, which further confirms the homogeneity of the crystalline material as well as the stability and homogeneity of the solutions in the storage containers.

UNCERTAINTY:

The maximum combined relative standard uncertainty of our reference standard solutions is calculated using the following equation:

The combined relative standard uncertainty, $u_c(y)$, of a value y and the uncertainty of the independent parameters

 $x_1, x_2,...x_n$ on which it depends is:

$$u_{\epsilon}(y(x_1, x_2, ... x_n)) = \sqrt{\sum_{i=1}^{n} u(y, x_i)^2}$$

where x is expressed as a relative standard uncertainty of the individual parameter.

The individual uncertainties taken into account include those associated with weights (calibration of the balance) and volumes (calibration of the volumetric glassware). An expanded maximum combined percent relative uncertainty of ±5% (calculated with a coverage factor of 2 and a level of confidence of 95%) is stated on the Certificate of Analysis for all of our products.

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EXPIRY DATE / PERIOD OF VALIDITY:

Ongoing stability studies of this product have demonstrated stability in its composition and concentration, until the specified expiry date, in the unopened ampoule. Monitoring for any degradation or change in concentration of the listed analyte(s) is performed on a routine basis.

LIMITED WARRANTY:

At the time of shipment, all products are warranted to be free of defects in material and workmanship and to conform to the stated technical and purity specifications.

QUALITY MANAGEMENT:

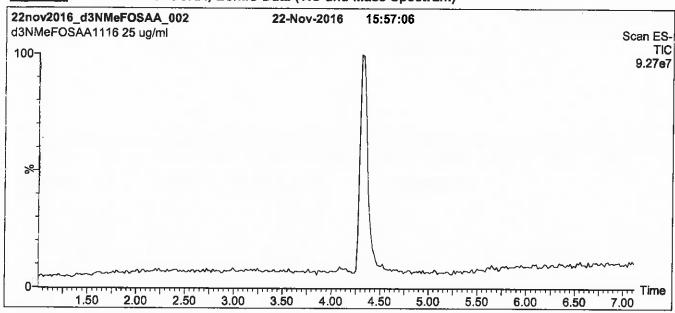
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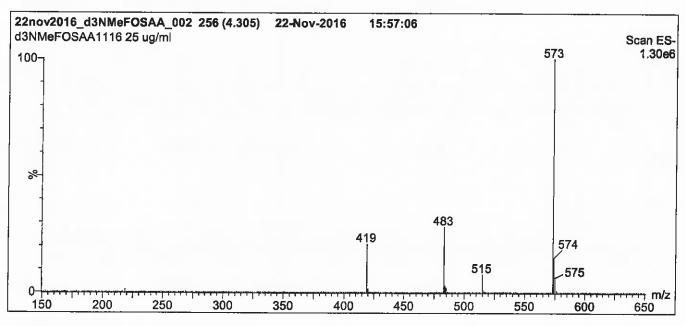




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Figure 1: d3-N-MeFOSAA; LC/MS Data (TIC and Mass Spectrum)





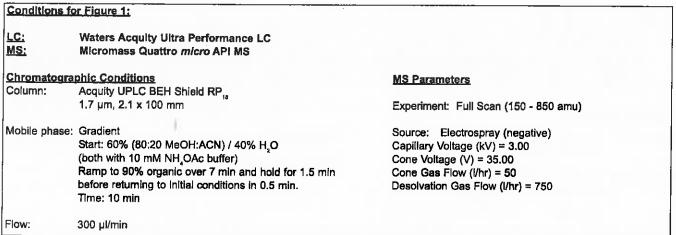
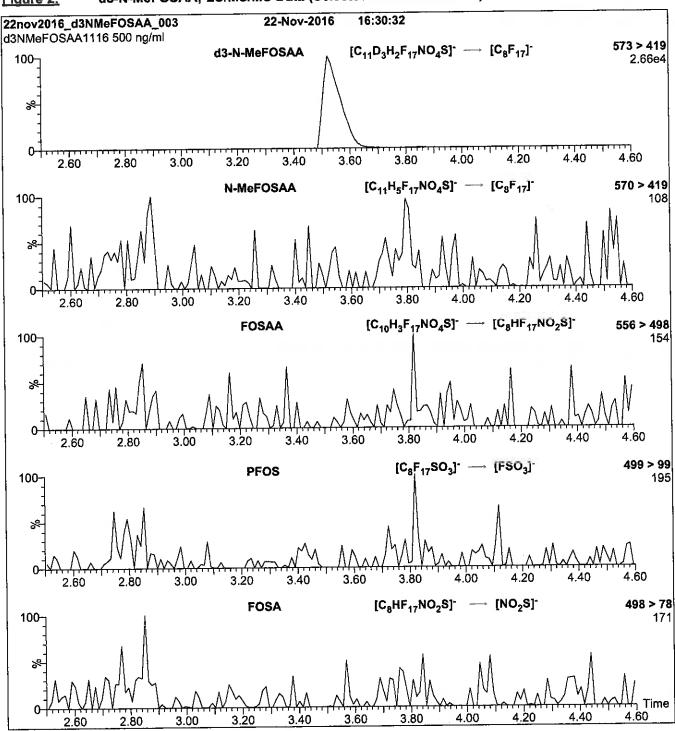
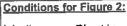


Figure 2: d3-N-MeFOSAA; LC/MS/MS Data (Selected MRM Transitions)





Injection:

Direct loop injection

10 µI (500 ng/ml d3-N-MeFOSAA)

Mobile phase: Isocratic 80% (80:20 MeOH:ACN) / 20% H₂O

(both with 10 mM NH OAc buffer)

MS Parameters

Collision Gas (mbar) = 3.43e-3 Collision Energy (eV) = 20

Flow:

300 µl/min

LCd5-NEtFOSAA_00004



PRODUCT CODE:

d5-N-EtFOSAA

LOT NUMBER:

d5NEtFOSAA1116

COMPOUND:

N-ethyl-d5-perfluoro-1-octanesulfonamidoacetic acid

STRUCTURE:

<u>CAS #:</u>

Not available

MOLECULAR FORMULA:

C,2D,H3F,,NO,S

MOLECULAR WEIGHT:

ISOTOPIC PURITY:

590.26

CONCENTRATION:

 $50 \pm 2.5 \, \mu g/ml$

SOLVENT(S):

Methanol

≥98% ²H₋

Water (<1%)

CHEMICAL PURITY:

>98%

LAST TESTED: (mm/dd/yyyy)

11/22/2016

EXPIRY DATE: (mm/dd/yyy)

RECOMMENDED STORAGE:

Refrigerate ampoule

11/22/2021

DOCUMENTATION/ DATA ATTACHED:

Figure 1: LC/MS Data (TIC and Mass Spectrum)

Figure 2: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

See page 2 for further details.

Contains 4 mole eq. of NaOH to prevent the conversion of the acetic acid molety to the methyl ester.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By:

Date: 12/01/2016

Wellington Laboratories Inc., 345 Southgate Dr. Guelph ON N1G 3M5 CANADA 519-822-2436 • Fax: 519-822-2849 • info@well-labs.com

The products prepared by Wellington Laboratories Inc. are for laboratory use only. This certified reference material (CRM) was designed to be used as a standard for the identification and/or quantification of the specific chemical compound it contains.

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TRACEABILITY:

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EXPIRY DATE / PERIOD OF VALIDITY:

Ongoing stability studies of this product have demonstrated stability in its composition and concentration, until the specified explry date, in the unopened ampoule. Monitoring for any degradation or change in concentration of the listed analyte(s) is performed on a routine basis.

LIMITED WARRANTY:

At the time of shipment, all products are warranted to be free of defects in material and workmanship and to conform to the stated technical and purity specifications.

QUALITY MANAGEMENT:

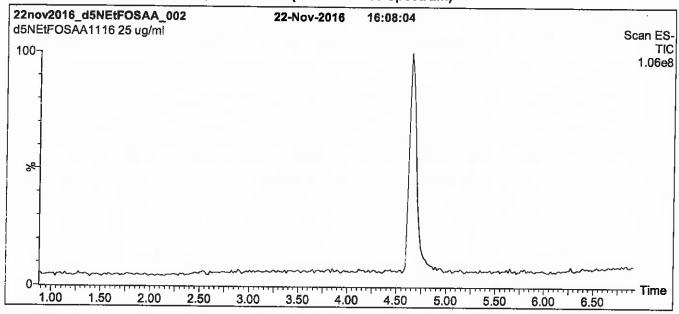
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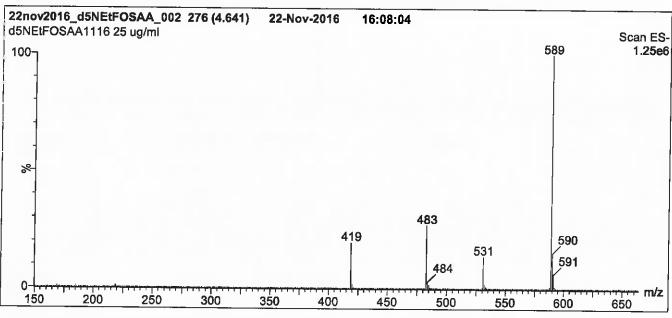




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Figure 1: d5-N-EtFOSAA; LC/MS Data (TiC and Mass Spectrum)





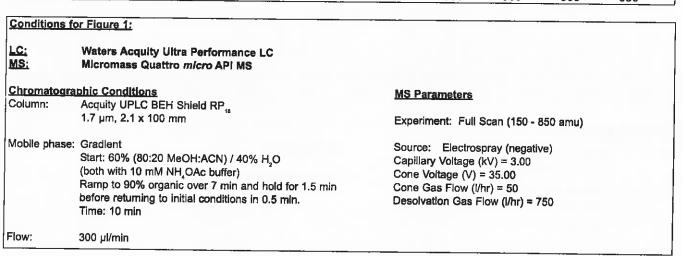
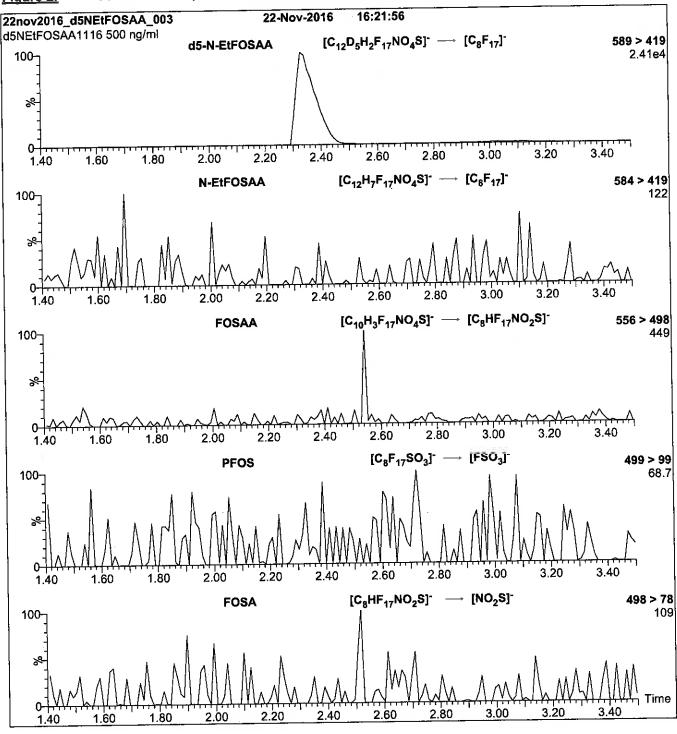
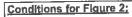


Figure 2: d5-N-EtFOSAA; LC/MS/MS Data (Selected MRM Transitions)





Injection:

Flow:

Direct loop injection

10 μ I (500 ng/ml d5-N-EtFOSAA)

Mobile phase: Isocratic 80% (80:20 MeOH:ACN) / 20% H₂O

(both with 10 mM NH OAc buffer)

300 µl/min

MS Parameters

Collision Gas (mbar) = 3.43e-3 Collision Energy (eV) = 20

Form#:27, Issued 2004-11-10 Revision#:3, Revised 2015-03-24

LCM2-6:FTS_00002

VELLINGTON ABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

M2-6:2FTS

PRODUCT CODE:

M2-6:2FTS

LOT NUMBER:

M262FTS0116

COMPOUND:

Sodium 1H,1H,2H,2H-perfluoro-[1,2-13C]octane sulfonate

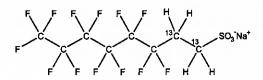
(Na salt)

 $47.5 \pm 2.4 \,\mu g/ml$ (M2-6:2FTS anion)

STRUCTURE:

CAS #:

Not available



MOLECULAR FORMULA:

¹³C, ¹²C, H, F, SO, Na

MOLECULAR WEIGHT:

452.13

CONCENTRATION:

50.0 ± 2.5 µg/ml

SOLVENT(S):

Methanol

CHEMICAL PURITY:

>98%

ISOTOPIC PURITY:

>99% 13C

LAST TESTED: (mm/dd/yyyy)

(1,2-13C₂)

01/08/2016

EXPIRY DATE: (mm/dd/yyyy)

01/08/2021

RECOMMENDED STORAGE:

Refrigerate ampoule

DOCUMENTATION/ DATA ATTACHED:

Figure 1: LC/MS Data (TIC and Mass Spectrum)

Figure 2: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

See page 2 for further details.

The native 6:2FTS contains 4.22% of ³⁴S (due to natural isotopic abundance) therefore both native 6:2FTS and M2-6:2FTS will produce signals in the m/z 429 to m/z 409 channel during SRM analysis. We recommend using the m/z 429 to m/z 81 transition to monitor for M2-6:2FTS during quantitative analysis as it will be free of any native contribution (see Figure 2).

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By:

Date: 01/11/2016

Wellington Laboratories Inc., 345 Southgate Dr. Guelph ON N1G 3M5 CANADA 519-822-2436 • Fax: 519-822-2849 • Info@well-labs.com

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LIMITED WARRANTY:

At the time of shipment, all products are warranted to be free of defects in material and workmanship and to conform to the stated technical and purity specifications.

QUALITY MANAGEMENT:

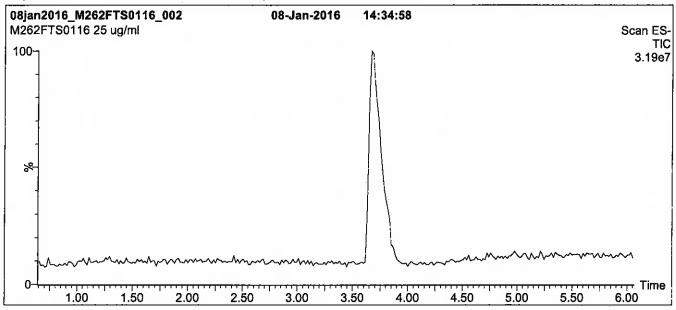
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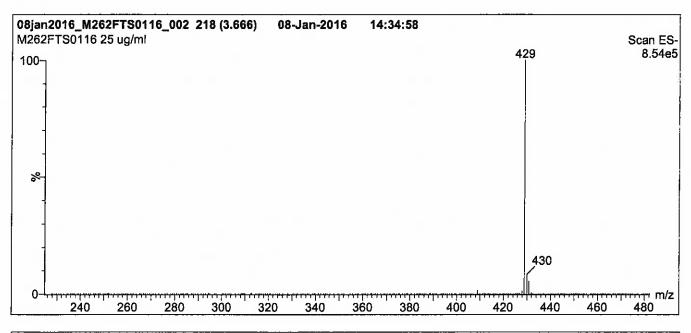




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Figure 1: M2-6:2FTS; LC/MS Data (TIC and Mass Spectrum)





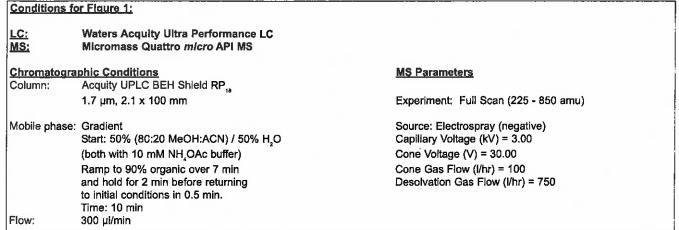
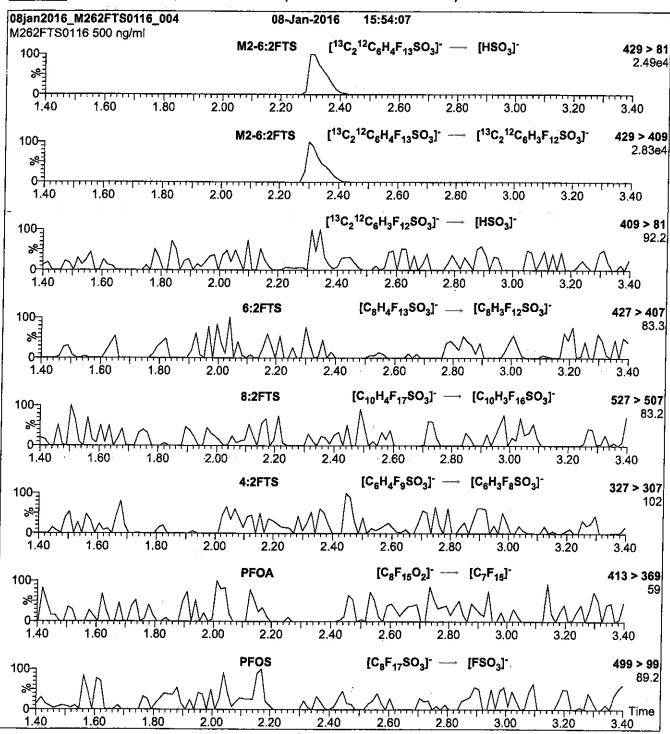
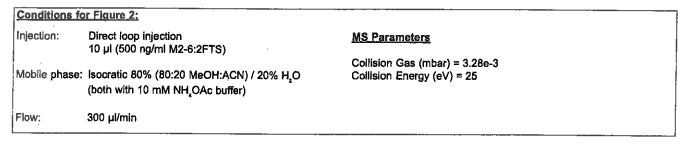


Figure 2: M2-6:2FTS; LC/MS/MS Data (Selected MRM Transitions)





LCM2-6:FTS_00004



PRODUCT CODE:

M2-6:2FTS

LOT NUMBER:

M262FTS0217

COMPOUND:

Sodium 1H,1H,2H,2H-perfluoro-[1,2-13C] octane sulfonate

STRUCTURE:

CAS #:

Not available

F C C C C 13C 13 SO₃ Na

MOLECULAR FORMULA:

¹³C₂¹²C₈H₄F₁₃SO₃Na

47.5 ± 2.4 µg/ml

MOLECULAR WEIGHT:

452.13

CONCENTRATION:

 $50.0 \pm 2.5 \,\mu g/ml$ (Na sait) SOLVENT(S):

Methanol

CHEMICAL PURITY:

>98%

≥99% 13C

LAST TESTED: (mm/dd/yyw)

ISOTOPIC PURITY:

(1,2-13C₂)

EXPIRY DATE: (mm/dd/yyyy)

02/17/2017

02/17/2022

RECOMMENDED STORAGE:

Refrigerate ampoule

DOCUMENTATION/ DATA ATTACHED:

Figure 1: LC/MS Data (TIC and Mass Spectrum)

Figure 2: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

See page 2 for further details.

The native 6:2FTS contains 4.22% of ³⁴S (due to natural isotopic abundance) therefore both native 6:2FTS and M2-6:2FTS will produce signals in the m/z 429 to m/z 409 channel during SRM analysis. We recommend using the m/z 429 to m/z 81 transition to monitor for M2-6:2FTS during quantitative analysis as it will be free of any native contribution (see Figure 2).

(M2-6:2FTS anion)

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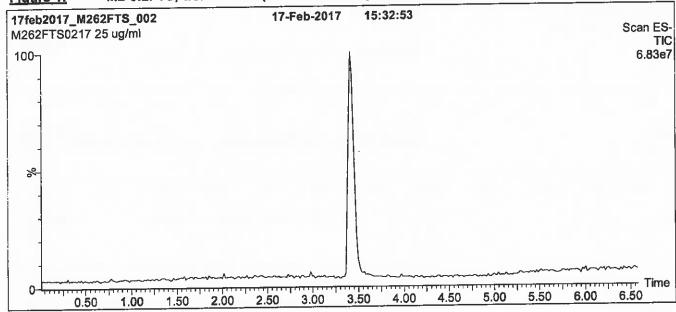
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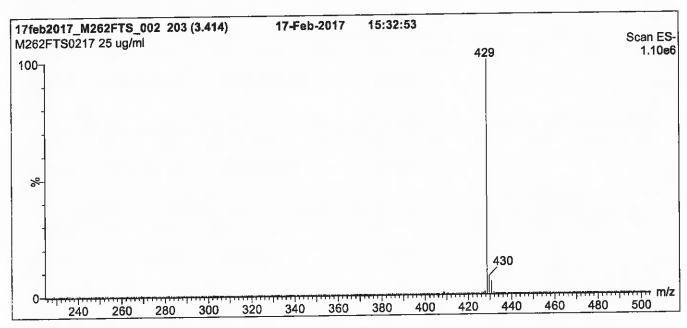




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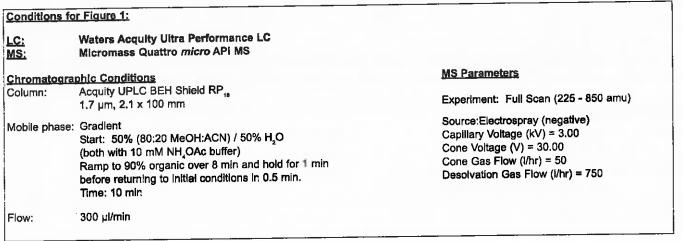
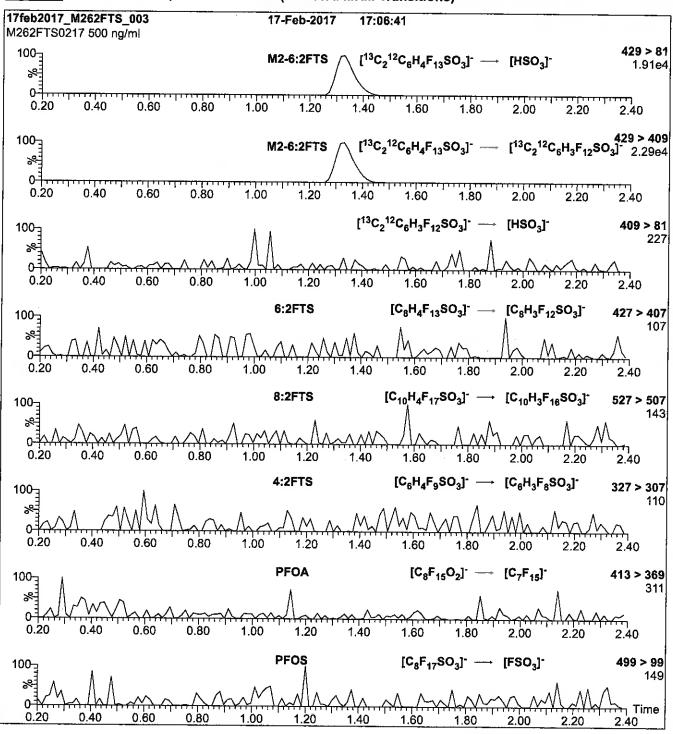
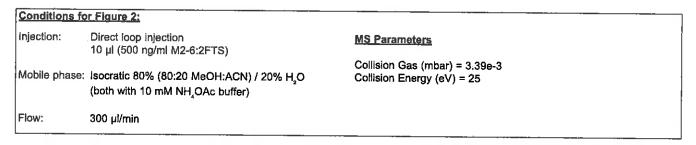


Figure 2: M2-6:2FTS; LC/MS/MS Data (Selected MRM Transitions)





LCM2-8:2FTS_00002

PRODUCT CODE:

M2-8:2FTS

LOT NUMBER:

M282FTS0116

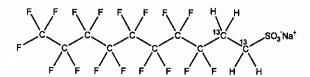
COMPOUND:

Sodium 1H,1H,2H,2H-perfluoro-[1,2-13C,]decane sulfonate

STRUCTURE:

CAS #:

Not available



 $47.9 \pm 2.4 \,\mu g/ml$ (M2-8:2FTS anion)

MOLECULAR FORMULA:

13C, 12C, H, F, , SO, Na

MOLECULAR WEIGHT:

552.15

CONCENTRATION:

50.0 ± 2.5 µg/ml (Na salt) SOLVENT(S):

Methanol

>98%

ISOTOPIC PURITY:

≥99% ¹³C

CHEMICAL PURITY: LAST TESTED: (mm/dd/yyyy)

(1,2-13C₂)

EXPIRY DATE: (mm/dd/yyyy)

01/08/2016 01/08/2021

RECOMMENDED STORAGE:

Refrigerate ampoule

DOCUMENTATION/ DATA ATTACHED:

Figure 1: LC/MS Data (TIC and Mass Spectrum)

Figure 2: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

See page 2 for further details.

The native 8:2FTS contains 4.22% of *S (due to natural isotopic abundance) therefore both native 8:2FTS and M2-8:2FTS will produce signals in the m/z 529 to m/z 509 channel during SRM analysis. We recommend using the m/z 529 to m/z 81 transition to monitor for M2-8:2FTS during quantitative analysis as it will be free of any native contribution (see Figure 2).

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By:

Date: 01/18/2016

The products prepared by Wellington Laboratories Inc. are for laboratory use only. This certified reference material (CRM) was designed to be used as a standard for the identification and/or quantification of the specific chemical compound it contains.

HAZARDS:

This product should only be used by qualified personnel familiar with its potential hazards and trained in the handling of hazardous chemicals. Due care should be exercised to prevent unnecessary human contact or ingestion. All procedures should be carried out in a well-functioning fume hood and suitable gloves, eye protection, and clothing should be worn at all times. Waste should be disposed of according to national and regional regulations. Safety Data Sheets (SDSs) are available upon request.

SYNTHESIS / CHARACTERIZATION:

Where possible, all of our products are synthesized using single-product unambiguous routes. They are then characterized, and their structures and purities confirmed, using a combination of the most relevant techniques, such as NMR, GC/MS, LC/MS/MS, SFC/UV/MS/MS, x-ray crystallography, and melting point. Isotopic purities of mass-labelled compounds are also confirmed using HRGC/HRMS and/or LC/MS/MS.

HOMOGENEITY:

Prior to solution preparation, crystalline material is tested for homogeneity using a variety of techniques (as stated above) and its solubility in a given diluent is taken into consideration. Duplicate solutions of a new product are prepared from the same crystalline lot and, after the addition of an appropriate internal standard, they are compared by GC/MS, LC/MS/MS and/or SFC/UV/MS/MS. The relative response factors of the analyte of interest in each solution are required to be <5% RSD. New solution lots of existing products are compared to older lots in the same manner, which further confirms the homogeneity of the crystalline material as well as the stability and homogeneity of the solutions in the storage containers.

UNCERTAINTY:

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 $X_1, X_2, ... X_n$ on which it depends is:

$$u_c(y(x_1, x_2, ...x_n)) = \sqrt{\sum_{i=1}^n u(y, x_i)^2}$$

where x is expressed as a relative standard uncertainty of the individual parameter.

The individual uncertainties taken into account include those associated with weights (calibration of the balance) and volumes (calibration of the volumetric glassware). An expanded maximum combined percent relative uncertainty of $\pm 5\%$ (calculated with a coverage factor of 2 and a level of confidence of 95%) is stated on the Certificate of Analysis for all of our products.

TRACEABILITY:

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EXPIRY DATE / PERIOD OF VALIDITY:

Ongoing stability studies of this product have demonstrated stability in its composition and concentration, until the specified expiry date, in the unopened ampoule. Monitoring for any degradation or change in concentration of the listed analyte(s) is performed on a routine basis.

LIMITED WARRANTY:

At the time of shipment, all products are warranted to be free of defects in material and workmanship and to conform to the stated technical and purity specifications.

QUALITY MANAGEMENT:

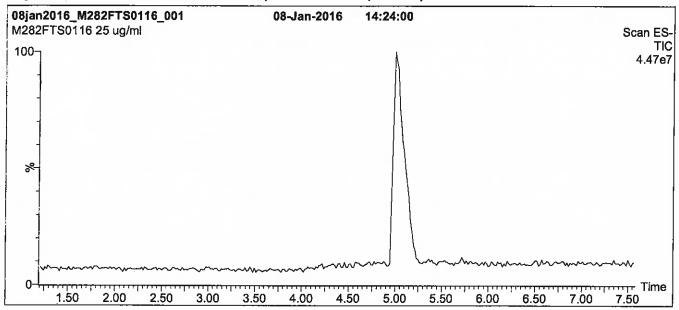
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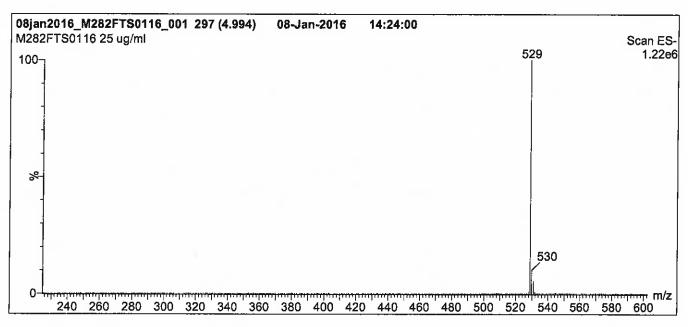




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Figure 1: M2-8:2FTS; LC/MS Data (TIC and Mass Spectrum)





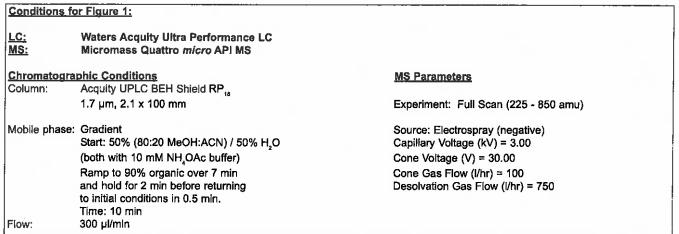
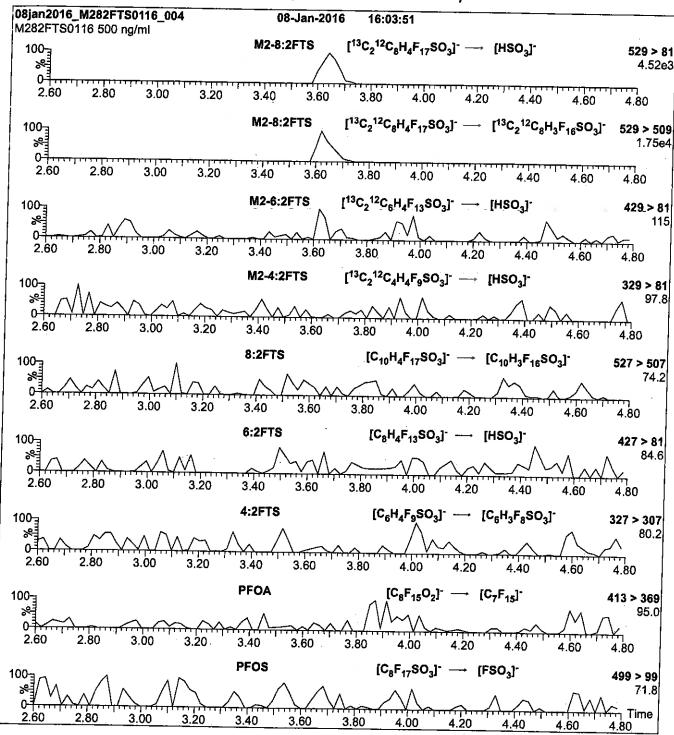
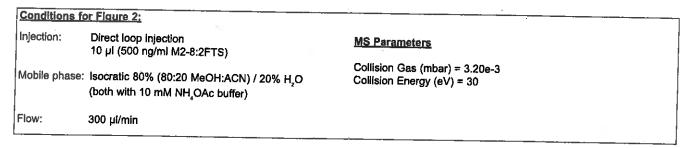


Figure 2: M2-8:2FTS; LC/MS/MS Data (Selected MRM Transitions)





LCM2-8:2FTS 00004



PRODUCT CODE:

M2-8:2FTS

LOT NUMBER:

M282FTS0816

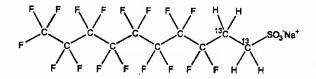
COMPOUND:

Sodium 1H,1H,2H,2H-perfluoro-[1,2-13C,]decane sulfonate

STRUCTURE:

CAS #:

Not available



MOLECULAR FORMULA:

13C, 12C, H,F,,SO,Na

MOLECULAR WEIGHT:

552.15

CONCENTRATION:

50.0 ± 2.5 µg/ml (Na salt)

SOLVENT(S):

Methanol

 $47.9 \pm 2.4 \, \mu g/ml$

(M2-8:2FTS anion)

CHEMICAL PURITY:

>98%

ISOTOPIC PURITY:

≥99% ¹³C

LAST TESTED: (mm/dd/yyyy)

08/22/2016

(1,2-13C₂)

EXPIRY DATE: (mm/dd/yyyy)

08/22/2021

RECOMMENDED STORAGE:

Refrigerate ampoule

DOCUMENTATION/ DATA ATTACHED:

Figure 1: LC/MS Data (TIC and Mass Spectrum)

Figure 2: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

See page 2 for further details.

The native 8:2FTS contains 4.22% of 34S (due to natural isotopic abundance) therefore both native 8:2FTS and M2-8:2FTS will produce signals in the m/z 529 to m/z 509 channel during SRM analysis. We recommend using the m/z 529 to m/z 81 transition to monitor for M2-8:2FTS during quantitative analysis as it will be free of any native contribution (see Figure 2).

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By:

Date: 09/02/2016

Wellington Laboratories Inc., 345 Southgate Dr. Guelph ON N1G 3M5 CANADA 519-822-2436 • Fax: 519-822-2849 • info@well-labs.com

The products prepared by Wellington Laboratories Inc. are for laboratory use only. This certified reference material (CRM) was designed to be used as a standard for the identification and/or quantification of the specific chemical compound it contains.

HAZARDS:

This product should only be used by qualified personnel familiar with its potential hazards and trained in the handling of hazardous chemicals. Due care should be exercised to prevent unnecessary human contact or ingestion. All procedures should be carried out in a well-functioning fume hood and suitable gloves, eye protection, and clothing should be worn at all times. Waste should be disposed of according to national and regional regulations. Safety Data Sheets (SDSs) are available upon request.

SYNTHESIS / CHARACTERIZATION:

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UNCERTAINTY:

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 $x_1, x_2, ..., x_n$ on which it depends is:

 $u_c(y(x_1,x_2,...x_n)) = \sqrt{\sum_{i=1}^n u(y,x_i)^2}$

where x is expressed as a relative standard uncertainty of the individual parameter.

The individual uncertainties taken into account include those associated with weights (calibration of the balance) and volumes (calibration of the volumetric glassware). An expanded maximum combined percent relative uncertainty of ±5% (calculated with a coverage factor of 2 and a level of confidence of 95%) is stated on the Certificate of Analysis for all of our products.

TRACEABILITY:

All reference standard solutions are traceable to specific crystalline lots. The microbalances used for solution preparation are regularly tested by an external ISO/IEC 17025 accredited calibration company. In addition, their calibration is verified prior to each weighing using NIST and/or NRC traceable external weights. All volumetric glassware used is of Class A tolerance and has been tested according to the appropriate ASTM procedures, which are ultimately traceable to NIST. For certain products, traceability to international interlaboratory studies has also been established.

EXPIRY DATE / PERIOD OF VALIDITY:

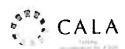
Ongoing stability studies of this product have demonstrated stability in its composition and concentration, until the specified expiry date, in the unopened ampoule. Monitoring for any degradation or change in concentration of the listed analyte(s) is performed on a routine basis.

LIMITED WARRANTY:

At the time of shipment, all products are warranted to be free of defects in material and workmanship and to conform to the stated technical and purity specifications.

QUALITY MANAGEMENT:

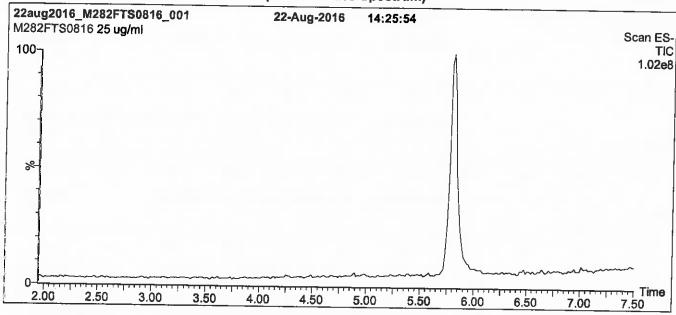
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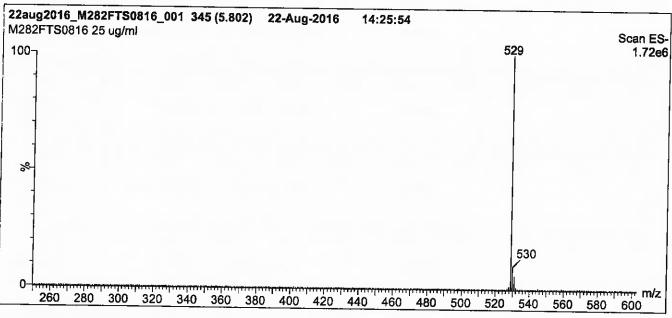




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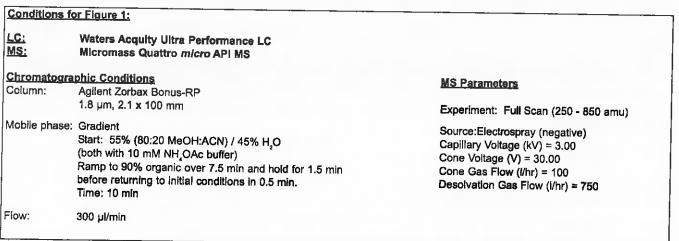
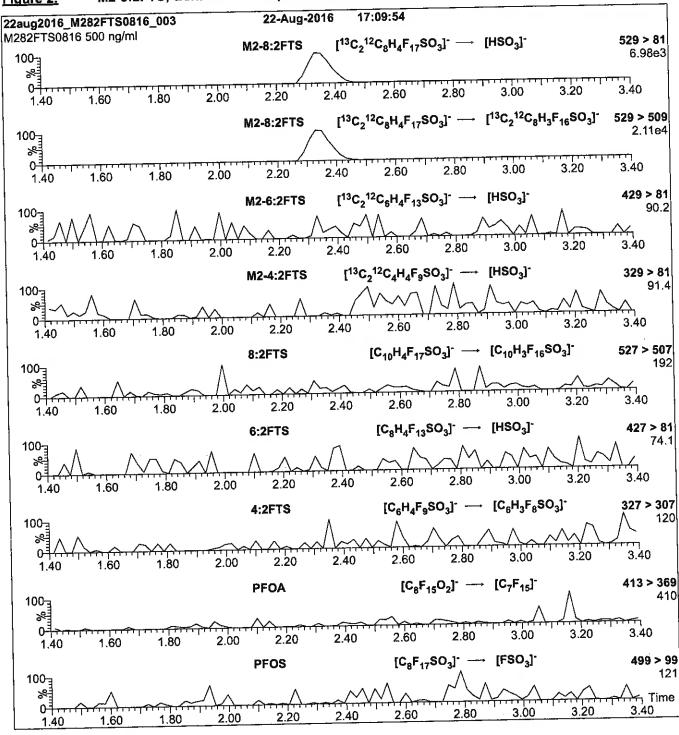
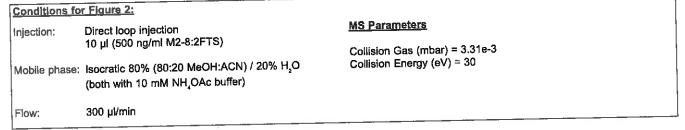


Figure 2: M2-8:2FTS; LC/MS/MS Data (Selected MRM Transitions)





LCM2PFHxDA_00009



PRODUCT CODE:

M2PFHxDA

LOT NUMBER:

M2PFHxDA1112

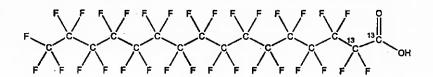
COMPOUND:

Perfluoro-n-[1,2-13C] hexadecanoic acid

STRUCTURE:

CAS #:

Not available



MOLECULAR FORMULA:

¹³C₂¹²C₁₄HF₃₁O₂

MOLECULAR WEIGHT:

816.11

CONCENTRATION:

 $50 \pm 2.5 \, \mu g/ml$

SOLVENT(S):

Methanoi

CHEMICAL PURITY:

>98%

Water (<1%)

LAST TESTED: (mm/dd/yyyy)

01/07/2016

ISOTOPIC PURITY:

≥99% ¹³C (1,2-13C₂)

EXPIRY DATE: (mm/dd/yyyy)

01/07/2021

RECOMMENDED STORAGE:

Store ampoule in a cool, dark place

DOCUMENTATION/ DATA ATTACHED:

Figure 1: LC/MS Data (TIC and Mass Spectrum)

Figure 2: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

See page 2 for further details.

Contains 4 mole eq. of NaOH to prevent conversion of the carboxylic acid to the methyl ester.

Contains ~ 0.3% of native perfluoro-n-hexadecanoic acid.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By:

Date: 01/11/2016

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HAZARDS:

This product should only be used by qualified personnel familiar with its potential hazards and trained in the handling of hazardous chemicals. Due care should be exercised to prevent unnecessary human contact or ingestion. All procedures should be carried out in a well-functioning fume hood and suitable gloves, eye protection, and clothing should be worn at all times. Waste should be disposed of according to national and regional regulations. Safety Data Sheets (SDSs) are available upon request.

SYNTHESIS / CHARACTERIZATION:

Where possible, all of our products are synthesized using single-product unambiguous routes. They are then characterized, and their structures and purities confirmed, using a combination of the most relevant techniques, such as NMR, GC/MS, LC/MS/MS, SFC/UV/MS/MS, x-ray crystallography, and melting point. Isotopic purities of mass-labelled compounds are also confirmed using HRGC/HRMS and/or LC/MS/MS.

HOMOGENEITY:

Prior to solution preparation, crystalline material is tested for homogeneity using a variety of techniques (as stated above) and its solubility in a given diluent is taken into consideration. Duplicate solutions of a new product are prepared from the same crystalline lot and, after the addition of an appropriate internal standard, they are compared by GC/MS, LC/MS/MS and/or SFC/UV/MS/MS. The relative response factors of the analyte of interest in each solution are required to be <5% RSD. New solution lots of existing products are compared to older lots in the same manner, which further confirms the homogeneity of the crystalline material as well as the stability and homogeneity of the solutions in the storage containers.

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$$x_1, x_2,...x_n$$
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EXPIRY DATE / PERIOD OF VALIDITY:

Ongoing stability studies of this product have demonstrated stability in its composition and concentration, until the specified expiry date, in the unopened ampoule. Monitoring for any degradation or change in concentration of the listed analyte(s) is performed on a routine basis.

LIMITED WARRANTY:

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QUALITY MANAGEMENT:

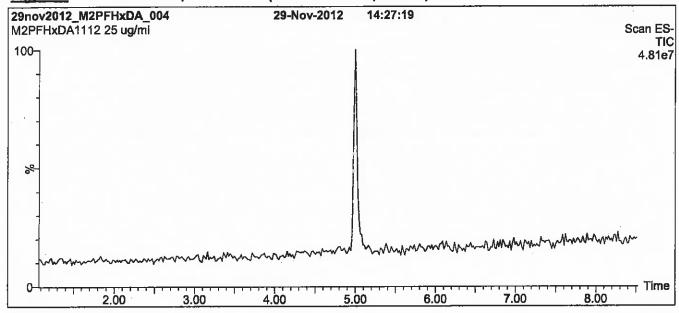
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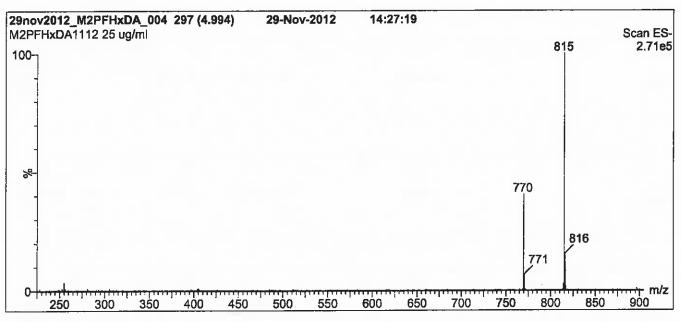




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Figure 1: M2PFHxDA; LC/MS Data (TIC and Mass Spectrum)





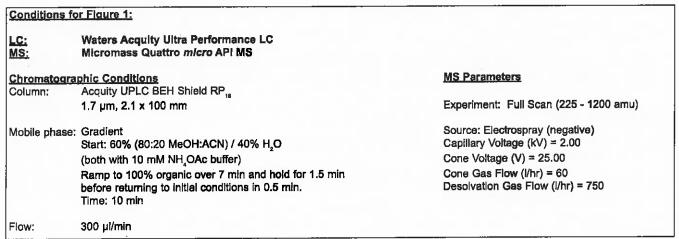
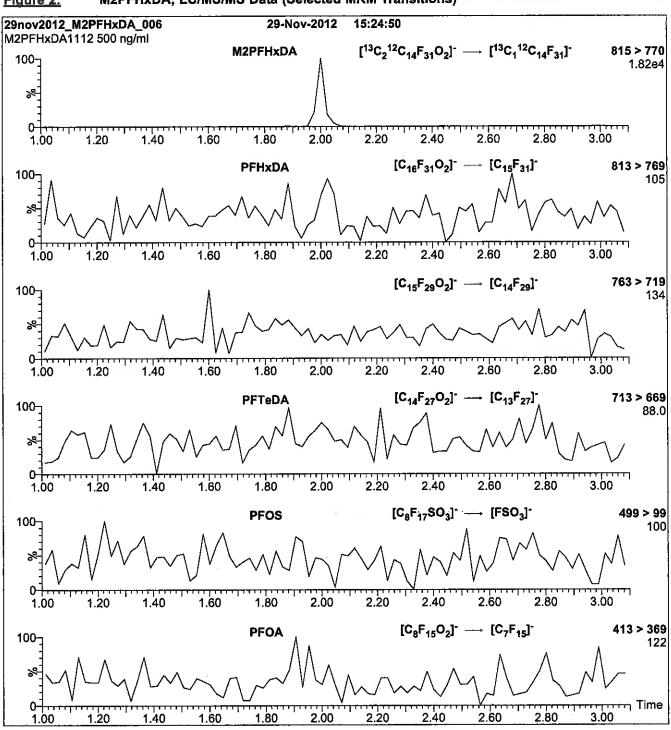
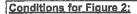


Figure 2: M2PFHxDA; LC/MS/MS Data (Selected MRM Transitions)





Injection:

Direct loop injection

10 μl (500 ng/ml M2PFHxDA)

Mobile phase: Isocratic 80% (80:20 MeOH:ACN) / 20% H₂O

(both with 10 mM NH,OAc buffer)

Flow:

300 µl/min

MS Parameters

Collision Gas (mbar) = 3.39e-3 Collision Energy (eV) = 15

LCM2PFHxDA_00010



PRODUCT CODE:

M2PFHxDA

LOT NUMBER:

M2PFHxDA1112

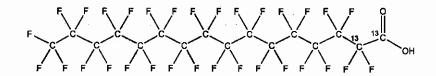
COMPOUND:

Perfluoro-n-[1,2-13C] hexadecanoic acid

STRUCTURE:

CAS #:

Not available



MOLECULAR FORMULA:

¹³C₂¹²C₁₄HF₃₁O₂

MOLECULAR WEIGHT:

816.11

CONCENTRATION:

 $50 \pm 2.5 \, \mu g/ml$

SOLVENT(S):

Methanol

CHEMICAL PURITY:

>98%

ISOTOPIC PURITY:

Water (<1%) >99% 13C (1,2-13C₂)

LAST TESTED: (mm/dd/yyyy)

01/07/2016

EXPIRY DATE: (mm/dd/yyyy)

01/07/2021

RECOMMENDED STORAGE:

Store ampoule in a cool, dark place

DOCUMENTATION/ DATA ATTACHED:

Figure 1: LC/MS Data (TIC and Mass Spectrum)

Figure 2: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

See page 2 for further details.

Contains 4 mole eq. of NaOH to prevent conversion of the carboxylic acid to the methyl ester.

Contains ~ 0.3% of native perfluoro-n-hexadecanoic acid.

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LIMITED WARRANTY:

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QUALITY MANAGEMENT:

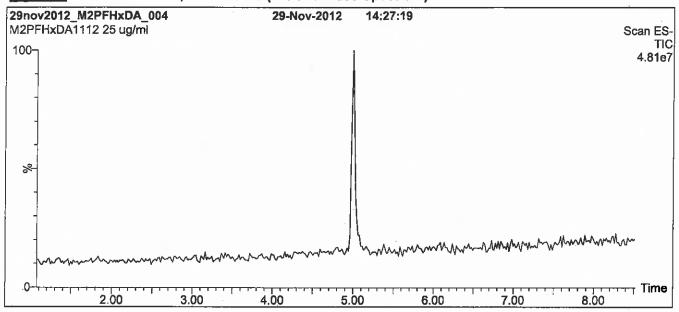
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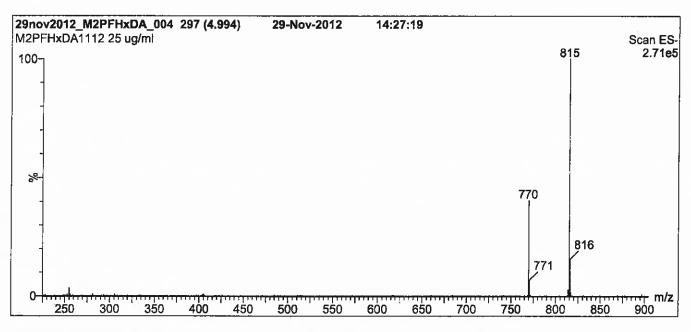




For additional information or assistance concerning this or any other products from Wellington Laboratories Inc., please visit our website at www.well-labs.com or contact us directly at info@well-labs.com

Figure 1: M2PFHxDA; LC/MS Data (TIC and Mass Spectrum)





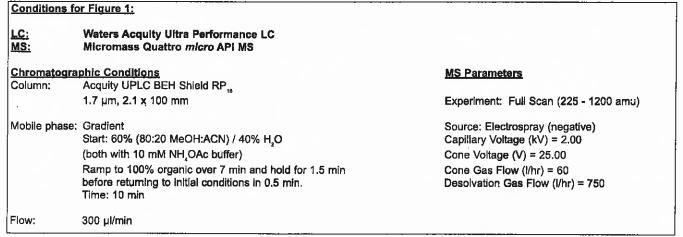
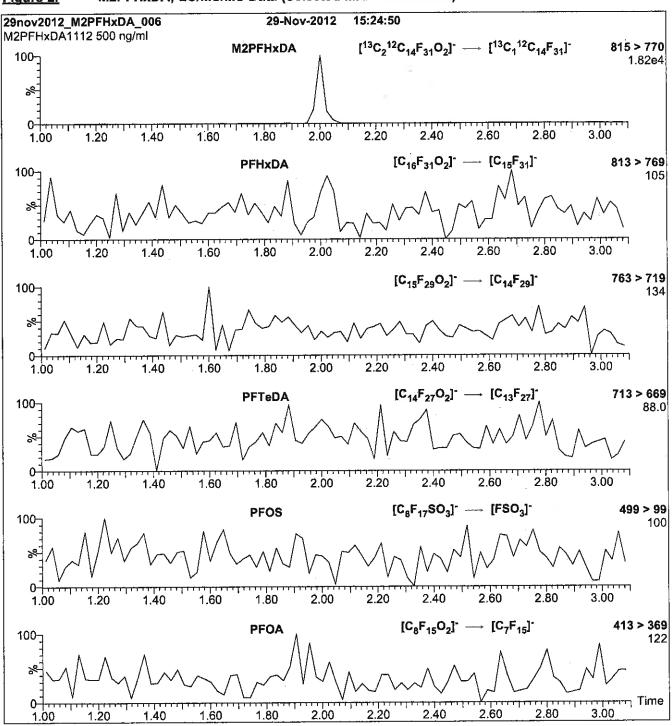
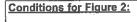


Figure 2: M2PFHxDA; LC/MS/MS Data (Selected MRM Transitions)





Injection:

Direct loop injection

10 µl (500 ng/ml M2PFHxDA)

Mobile phase: Isocratic 80% (80:20 MeOH:ACN) / 20% H,O

(both with 10 mM NH₄OAc buffer)

Flow:

300 µl/min

MS Parameters

Collision Gas (mbar) = 3.39e-3 Collision Energy (eV) = 15

LCM2PFOA_00005



PRODUCT CODE:

M2PFOA

LOT NUMBER:

M2PFOA0613

COMPOUND:

Perfluoro-n-[1,2-13C] octanoic acid

STRUCTURE:

CAS #:

Not available

MOLECULAR FORMULA:

¹³C₂¹²C₆HF₁₅O₂

MOLECULAR WEIGHT:

416.05

CONCENTRATION:

 $50 \pm 2.5 \, \mu g/ml$

SOLVENT(S):

Methanol

Water (<1%)

CHEMICAL PURITY:

>98%

ISOTOPIC PURITY:

>99%13C $(1,2^{-13}C_2)$

LAST TESTED: (mm/dd/yyyy)

06/19/2013

EXPIRY DATE: (mm/dd/yyyy)

06/19/2018

RECOMMENDED STORAGE:

Store ampoule in a cool, dark place

DOCUMENTATION/ DATA ATTACHED:

Figure 1: LC/MS Data (TIC and Mass Spectrum)

Figure 2: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

See page 2 for further details.

Contains 4 mole eq. of NaOH to prevent conversion of the carboxylic acid to the methyl ester.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By:

Wellington Laboratories Inc., 345 Southgate Dr. Guelph ON N1G 3M5 CANADA 519-822-2436 • Fax: 519-822-2849 • info@well-labs.com

The products prepared by Wellington Laboratories Inc. are for laboratory use only. They are designed to be used as reference standards for the identification and/or quantification of specific chemical compound(s).

HAZARDS:

This product should only be used by qualified personnel familiar with its potential hazards and trained in the handling of hazardous chemicals. Due care should be exercised to prevent unnecessary human contact or ingestion. All procedures should be carried out in a well-functioning fume hood and suitable gloves, eye protection and clothing should be worn at all times. Waste should be disposed of according to national and regional regulations. Material Safety Data Sheets (MSDSs) are available upon request.

SYNTHESIS / CHARACTERIZATION:

Where possible, all of our products are synthesized using single-product, unambiguous routes. They are then characterized, and their structures and purities confirmed, using a combination of the most relevant techniques, such as NMR, GC/MS, LC/MS/MS, x-ray crystallography and melting point. Isotopic purities of mass-labelled compounds are also confirmed using HRGC/HRMS and/or LC/MS/MS.

HOMOGENEITY:

Prior to solution preparation, crystalline material is tested for homogeneity using a variety of techniques (as stated above) and its solubility in a given diluent is taken into consideration. Duplicate solutions of a new product are prepared from the same crystalline lot and, after the addition of an appropriate internal standard, they are compared by GC/MS and/or LC/MS/MS. The relative response factors of the analyte of interest in each solution are required to be <5% RSD. New solution lots of existing products are compared to older lots in the same manner, which further confirms the homogeneity of the crystalline material as well as the stability and homogeneity of the solutions in the storage containers.

UNCERTAINTY:

The maximum combined relative standard uncertainty of our reference standard solutions is calculated using the following equation:

The combined relative standard uncertainty, u(y), of a value y and the uncertainty of the independent parameters

 $x_{4}, x_{2},...,x_{n}$ on which it depends is:

$$u_{\epsilon}(y(x_1, x_2, ...x_n)) = \sqrt{\sum_{i=1}^{n} u(y, x_i)^2}$$

where x is expressed as a relative standard uncertainty of the individual parameter.

The individual uncertainties taken into account include those associated with weights (calibration of the balance) and volumes (calibration of the volumetric glassware). An expanded maximum combined percent relative uncertainty of ±5% (calculated with a coverage factor of 2 and a level of confidence of 95%) is stated on the Certificate of Analysis for all our products.

TRACEABILITY:

All reference standard solutions are traceable to specific crystalline lots. The microbalances used for solution preparation are regularly tested by an external, ISO/IEC 17025:2005 accredited calibration company. In addition, their calibration is verified prior to each weighing using NIST and/or NRC traceable external weights. All volumetric glassware used is of Class A tolerance and has been tested according to the appropriate ASTM procedures, which are ultimately traceable to NIST. For certain products, traceability to international interlaboratory studies has also been established.

EXPIRY DATE / PERIOD OF VALIDITY:

Ongoing stability studies of this product have demonstrated stability in its composition and concentration for the period of time specified by the expiry date in the unopened ampoule. Monitoring for any degradation or change in concentration of the listed analyte(s) is performed on a routine basis.

LIMITED WARRANTY:

At the time of shipment, all products are warranted to be free of defects in material and workmanship and to conform to the stated technical and purity specifications.

QUALITY MANAGEMENT:

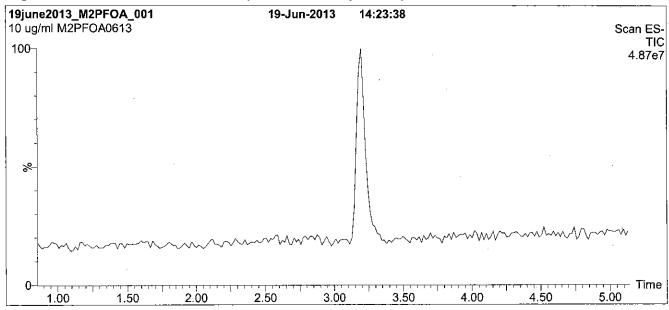
This product was produced using a Quality Management System registered to ISO 9001:2008 by SAI Global, ISO/IEC 17025:2005 by the Canadian Association for Laboratory Accreditation Inc. (CALA; A 1226), and ISO GUIDE 34:2009 by ACLASS (certificate number AR-1523).

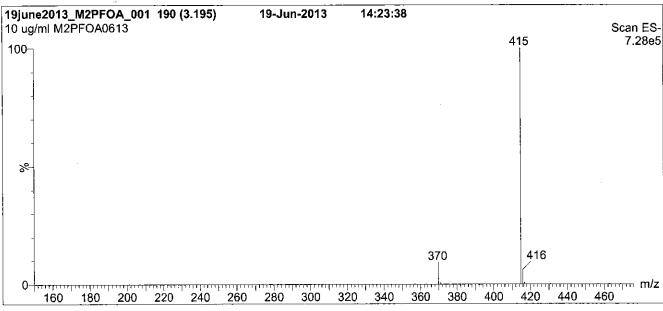




^{**}For additional information or assistance concerning this or any other products from Wellington Laboratories Inc., please visit our website at www.well-labs.com or contact us directly at info@well-labs.com**

Figure 1: M2PFOA; LC/MS Data (TIC and Mass Spectrum)





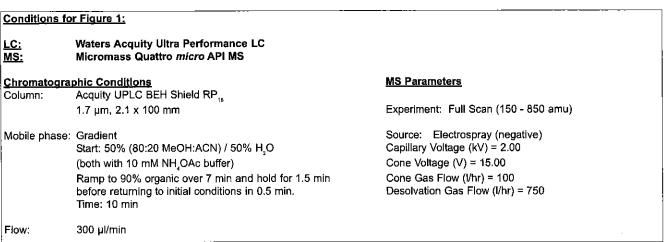
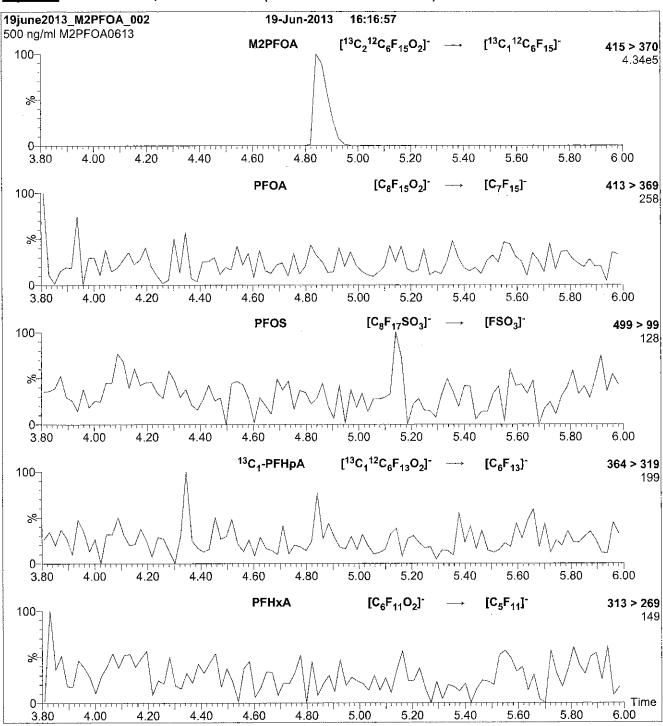
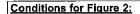


Figure 2: M2PFOA; LC/MS/MS Data (Selected MRM Transitions)





Injection:

Direct loop injection

10 µl (500 ng/ml M2PFOA)

Mobile phase: Isocratic 80% (80:20 MeOH:ACN) / 20% H₂O

(both with 10 mM NH,OAc buffer)

Flow:

300 µl/min

MS Parameters

Collision Gas (mbar) = 3.66e-3 Collision Energy (eV) = 11

LCM2PFOA_00006



WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE:

M2PFOA

COMPOUND:

Perfluoro-n-[1,2-13C] octanoic acid

LOT NUMBER:

M2PFOA0216

STRUCTURE:

CAS #:

Not available

MOLECULAR FORMULA:

¹³C₂¹²C₆HF₁₅O₂

MOLECULAR WEIGHT:

ISOTOPIC PURITY:

416.05

CONCENTRATION:

 $50 \pm 2.5 \, \mu g/ml$

SOLVENT(S):

Methanol Water (<1%)

CHEMICAL PURITY:

>98%

LAST TESTED: (mm/dd/yyyy)

02/12/2016

EXPIRY DATE: (mm/dd/yyyy)

02/12/2021

RECOMMENDED STORAGE:

Store ampoule in a cool, dark place

≥99%¹³C (1,2-13C_a)

DOCUMENTATION/ DATA ATTACHED:

Figure 1: LC/MS Data (TIC and Mass Spectrum)

Figure 2: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

See page 2 for further details.

Contains 4 mole eq. of NaOH to prevent conversion of the carboxylic acid to the methyl ester.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By:

Date: 02/24/2016

Wellington Laboratories Inc., 345 Southgate Dr. Guelph ON N1G 3M5 CANADA 519-822-2436 • Fax: 519-822-2849 • info@well-labs.com

The products prepared by Wellington Laboratories Inc. are for laboratory use only. This certified reference material (CRM) was designed to be used as a standard for the identification and/or quantification of the specific chemical compound it contains.

HAZARDS:

This product should only be used by qualified personnel familiar with its potential hazards and trained in the handling of hazardous chemicals. Due care should be exercised to prevent unnecessary human contact or ingestion. All procedures should be carried out in a well-functioning fume hood and suitable gloves, eye protection, and clothing should be worn at all times. Waste should be disposed of according to national and regional regulations. Safety Data Sheets (SDSs) are available upon request.

SYNTHESIS / CHARACTERIZATION:

Where possible, all of our products are synthesized using single-product unambiguous routes. They are then characterized, and their structures and purities confirmed, using a combination of the most relevant techniques, such as NMR, GC/MS, LC/MS/MS, SFC/UV/MS/MS, x-ray crystallography, and melting point. Isotopic purities of mass-labelled compounds are also confirmed using HRGC/HRMS and/or LC/MS/MS.

HOMOGENEITY:

Prior to solution preparation, crystalline material is tested for homogeneity using a variety of techniques (as stated above) and its solubility in a given diluent is taken into consideration. Duplicate solutions of a new product are prepared from the same crystalline lot and, after the addition of an appropriate internal standard, they are compared by GC/MS, LC/MS/MS and/or SFC/UV/MS/MS. The relative response factors of the analyte of interest in each solution are required to be <5% RSD. New solution lots of existing products are compared to older lots in the same manner, which further confirms the homogeneity of the crystalline material as well as the stability and homogeneity of the solutions in the storage containers.

UNCERTAINTY:

The maximum combined relative standard uncertainty of our reference standard solutions is calculated using the following equation:

The combined relative standard uncertainty, $u_c(y)$, of a value y and the uncertainty of the independent parameters

 $x_1, x_2,...x_n$ on which it depends is:

$$u_c(y(x_1, x_2, ...x_n)) = \sqrt{\sum_{i=1}^n u(y, x_i)^2}$$

where x is expressed as a relative standard uncertainty of the individual parameter.

The individual uncertainties taken into account include those associated with weights (calibration of the balance) and volumes (calibration of the volumetric glassware). An expanded maximum combined percent relative uncertainty of $\pm 5\%$ (calculated with a coverage factor of 2 and a level of confidence of 95%) is stated on the Certificate of Analysis for all of our products.

TRACEABILITY:

All reference standard solutions are traceable to specific crystalline lots. The microbalances used for solution preparation are regularly tested by an external ISO/IEC 17025 accredited calibration company. In addition, their calibration is verified prior to each weighing using NIST and/or NRC traceable external weights. All volumetric glassware used is of Class A tolerance and has been tested according to the appropriate ASTM procedures, which are ultimately traceable to NIST. For certain products, traceability to international interlaboratory studies has also been established.

EXPIRY DATE / PERIOD OF VALIDITY:

Ongoing stability studies of this product have demonstrated stability in its composition and concentration, until the specified expiry date, in the unopened ampoule. Monitoring for any degradation or change in concentration of the listed analyte(s) is performed on a routine basis.

LIMITED WARRANTY:

At the time of shipment, all products are warranted to be free of defects in material and workmanship and to conform to the stated technical and purity specifications.

QUALITY MANAGEMENT:

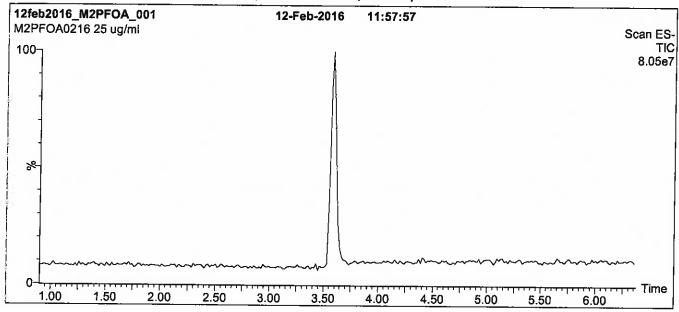
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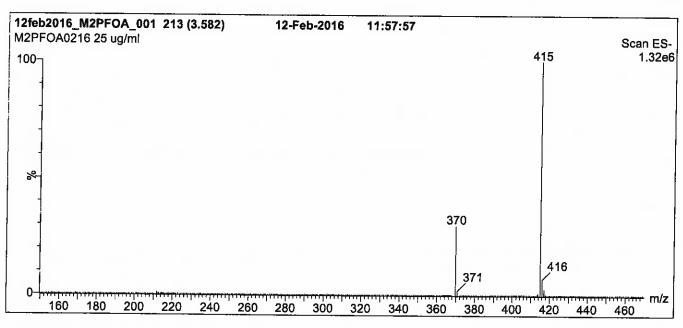




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Figure 1: M2PFOA; LC/MS Data (TIC and Mass Spectrum)





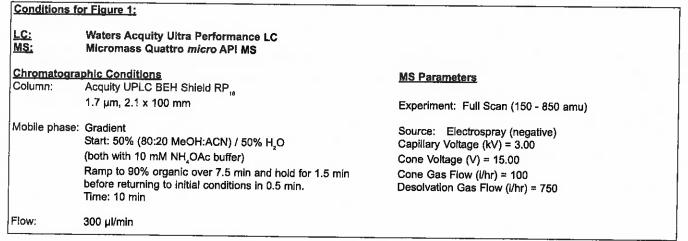
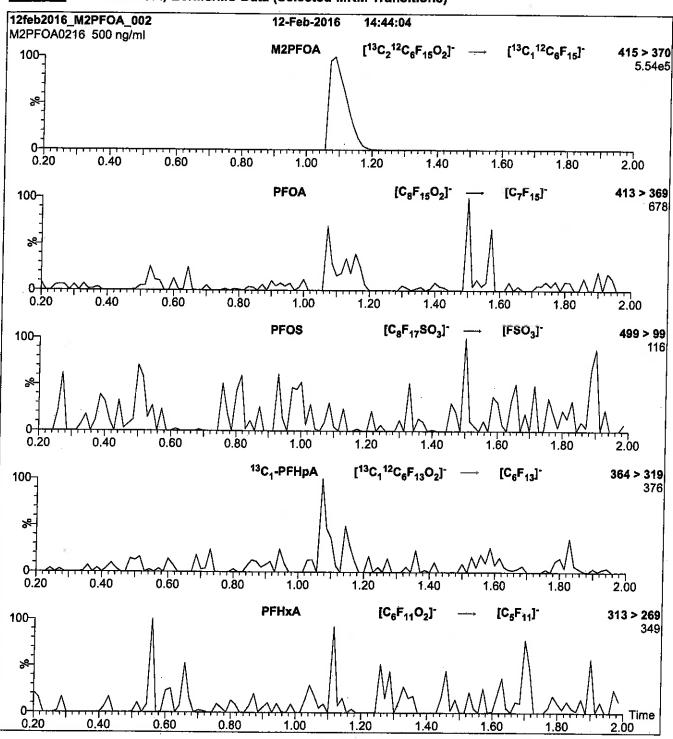
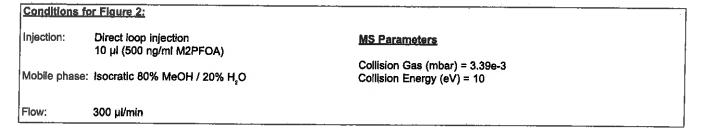


Figure 2: M2PFOA; LC/MS/MS Data (Selected MRM Transitions)





LCM2PFTeDA_00008



PRODUCT CODE:

M2PFTeDA

LOT NUMBER:

M2PFTeDA1115

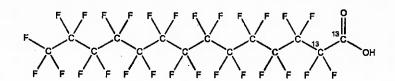
COMPOUND:

Perfluoro-n-[1,2-13C] tetradecanoic acid

STRUCTURE:

CAS #:

Not available



MOLECULAR FORMULA:

13C, 12C, HF,O,

MOLECULAR WEIGHT:

716.10

CONCENTRATION:

 $50 \pm 2.5 \, \mu g/ml$

SOLVENT(S):

Methanol

CHEMICAL PURITY:

>98%

ISOTOPIC PURITY:

Water (<1%) >99% ¹³C (1,2-13C₂)

LAST TESTED: (mm/dd/yyyy)

12/07/2015

EXPIRY DATE: (mm/dd/yyy)

12/07/2020

RECOMMENDED STORAGE:

Store ampoule in a cool, dark place

DOCUMENTATION/ DATA ATTACHED:

Figure 1: LC/MS Data (TIC and Mass Spectrum)

Figure 2: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

See page 2 for further details.

Contains 4 mole eq. of NaOH to prevent conversion of the carboxylic acid to the methyl ester.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By:

Date: 12/08/2015

The products prepared by Wellington Laboratories Inc. are for laboratory use only. This certified reference material (CRM) was designed to be used as a standard for the identification and/or quantification of the specific chemical compound it contains.

HAZARDS:

This product should only be used by qualified personnel familiar with its potential hazards and trained in the handling of hazardous chemicals. Due care should be exercised to prevent unnecessary human contact or ingestion. All procedures should be carried out in a well-functioning fume hood and suitable gloves, eye protection, and clothing should be worn at all times. Waste should be disposed of according to national and regional regulations. Safety Data Sheets (SDSs) are available upon request.

SYNTHESIS / CHARACTERIZATION:

Where possible, all of our products are synthesized using single-product unambiguous routes. They are then characterized, and their structures and purities confirmed, using a combination of the most relevant techniques, such as NMR, GC/MS, LC/MS/MS, SFC/UV/MS/MS, x-ray crystallography, and melting point. Isotopic purities of mass-labelled compounds are also confirmed using HRGC/HRMS and/or LC/MS/MS.

HOMOGENEITY:

Prior to solution preparation, crystalline material is tested for homogeneity using a variety of techniques (as stated above) and its solubility in a given diluent is taken into consideration. Duplicate solutions of a new product are prepared from the same crystalline lot and, after the addition of an appropriate internal standard, they are compared by GC/MS, LC/MS/MS and/or SFC/UV/MS/MS. The relative response factors of the analyte of interest in each solution are required to be <5% RSD. New solution lots of existing products are compared to older lots in the same manner, which further confirms the homogeneity of the crystalline material as well as the stability and homogeneity of the solutions in the storage containers.

UNCERTAINTY:

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 $x_1, x_2, ..., x_n$ on which it depends is:

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where x is expressed as a relative standard uncertainty of the individual parameter.

The individual uncertainties taken into account include those associated with weights (calibration of the balance) and volumes (calibration of the volumetric glassware). An expanded maximum combined percent relative uncertainty of $\pm 5\%$ (calculated with a coverage factor of 2 and a level of confidence of 95%) is stated on the Certificate of Analysis for all of our products.

TRACEABILITY:

All reference standard solutions are traceable to specific crystalline lots. The microbalances used for solution preparation are regularly tested by an external ISO/IEC 17025 accredited calibration company. In addition, their calibration is verified prior to each weighing using NIST and/or NRC traceable external weights. All volumetric glassware used is of Class A tolerance and has been tested according to the appropriate ASTM procedures, which are ultimately traceable to NIST. For certain products, traceability to international interlaboratory studies has also been established.

EXPIRY DATE / PERIOD OF VALIDITY:

Ongoing stability studies of this product have demonstrated stability in its composition and concentration, until the specified expiry date, in the unopened ampoule. Monitoring for any degradation or change in concentration of the listed analyte(s) is performed on a routine basis.

LIMITED WARRANTY:

At the time of shipment, all products are warranted to be free of defects in material and workmanship and to conform to the stated technical and purity specifications.

QUALITY MANAGEMENT:

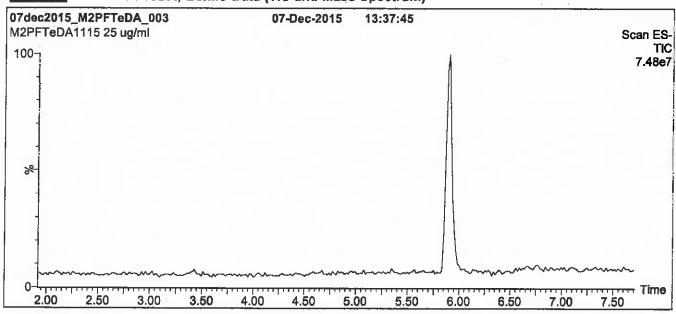
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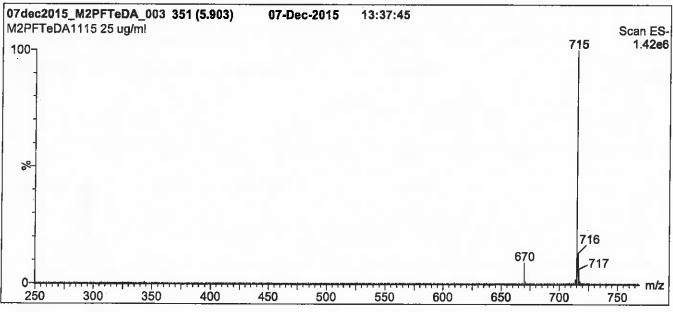




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M2PFTeDA; LC/MS Data (TIC and Mass Spectrum)





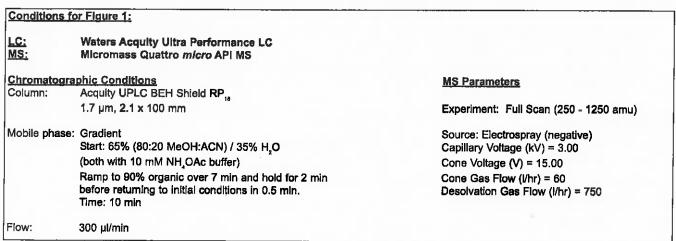
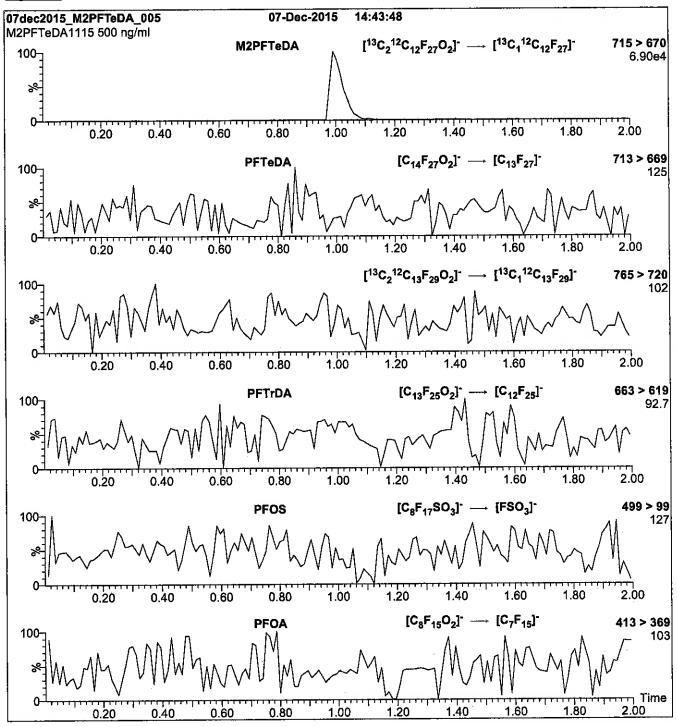
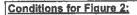


Figure 2: M2PFTeDA; LC/MS/MS Data (Selected MRM Transitions)





injection:

Direct loop injection

10 μl (500 ng/ml M2PFTeDA)

Mobile phase: Isocratic 80% (80:20 MeOH:ACN) / 20% H₂O

(both with 10 mM NH,OAc buffer)

Flow:

300 µl/min

MS Parameters

Collision Gas (mbar) = 3.28e-3 Collision Energy (eV) = 14

LCM2PFTeDA_00009



PRODUCT CODE:

M2PFTeDA

LOT NUMBER:

M2PFTeDA0217

COMPOUND:

Perfluoro-n-[1,2-13C,]tetradecanoic acid

STRUCTURE:

CAS #:

Not available

MOLECULAR FORMULA:

¹³C₂¹²C₁₂HF₂₇O₂

MOLECULAR WEIGHT:

716.10

CONCENTRATION:

 $50 \pm 2.5 \,\mu g/ml$

SOLVENT(S):

Methanol

CHEMICAL PURITY: >98%

ISOTOPIC PURITY:

Water (<1%) ≥99% 13C (1,2-13C₂)

LAST TESTED: (mm/dd/yyyy)

03/01/2017

EXPIRY DATE: (mm/dd/yyyy)

03/01/2022

RECOMMENDED STORAGE:

Store ampoule in a cool, dark place

DOCUMENTATION/ DATA ATTACHED:

Figure 1: LC/MS Data (TIC and Mass Spectrum)

Figure 2: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

See page 2 for further details.

Contains 4 mole eq. of NaOH to prevent conversion of the carboxylic acid to the methyl ester.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By:

B.G. Chittim, General Manager

Wellington Laboratories Inc., 345 Southgate Dr. Guelph ON N1G 3M5 CANADA 519-822-2436 • Fax: 519-822-2849 • info@well-labs.com

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HAZARDS:

This product should only be used by qualified personnel familiar with its potential hazards and trained in the handling of hazardous chemicals. Due care should be exercised to prevent unnecessary human contact or ingestion. All procedures should be carried out in a well-functioning fume hood and suitable gloves, eye protection, and clothing should be worn at all times. Waste should be disposed of according to national and regional regulations. Safety Data Sheets (SDSs) are available upon request.

SYNTHESIS / CHARACTERIZATION:

Where possible, all of our products are synthesized using single-product unambiguous routes. They are then characterized, and their structures and purities confirmed, using a combination of the most relevant techniques, such as NMR, GC/MS, LC/MS/MS, SFC/UV/MS/MS, x-ray crystallography, and melting point. Isotopic purities of mass-labelled compounds are also confirmed using HRGC/HRMS and/or LC/MS/MS.

HOMOGENEITY:

Prior to solution preparation, crystalline material is tested for homogeneity using a variety of techniques (as stated above) and its solubility in a given diluent is taken into consideration. Duplicate solutions of a new product are prepared from the same crystalline lot and, after the addition of an appropriate internal standard, they are compared by GC/MS, LC/MS/MS and/or SFC/UV/MS/MS. The relative response factors of the analyte of interest in each solution are required to be <5% RSD. New solution lots of existing products are compared to older lots in the same manner, which further confirms the homogeneity of the crystalline material as well as the stability and homogeneity of the solutions in the storage containers. In order to maintain the integrity of the assigned value(s), and associated uncertainty, the dilution or injection of a subsample of this product should be performed using calibrated measuring equipment.

UNCERTAINTY:

The maximum combined relative standard uncertainty of our reference standard solutions is calculated using the following equation:

The combined relative standard uncertainty, $u_c(y)$, of a value y and the uncertainty of the independent parameters

$$x_1, x_2, ... x_n$$
 on which it depends is:
$$u_c(y(x_1, x_2, ... x_n)) = \sqrt{\sum_{i=1}^n u(y, x_i)^2}$$

where x is expressed as a relative standard uncertainty of the individual parameter.

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TRACEABILITY:

All reference standard solutions are traceable to specific crystalline lots. The microbalances used for solution preparation are regularly tested by an external ISO/IEC 17025 accredited calibration company. In addition, their calibration is verified prior to each weighing using calibrated NIST and/or NRC traceable external weights. All volumetric glassware used is calibrated, of Class A tolerance, and has been tested according to the appropriate ASTM procedures, which are ultimately traceable to NIST. For certain products, traceability to international interlaboratory studies has also been established.

EXPIRY DATE / PERIOD OF VALIDITY:

Ongoing stability studies of this product have demonstrated stability in its composition and concentration, until the specified expiry date, in the unopened ampoule. Monitoring for any degradation or change in concentration of the listed analyte(s) is performed on a routine basis.

LIMITED WARRANTY:

At the time of shipment, all products are warranted to be free of defects in material and workmanship and to conform to the stated technical and purity specifications.

QUALITY MANAGEMENT:

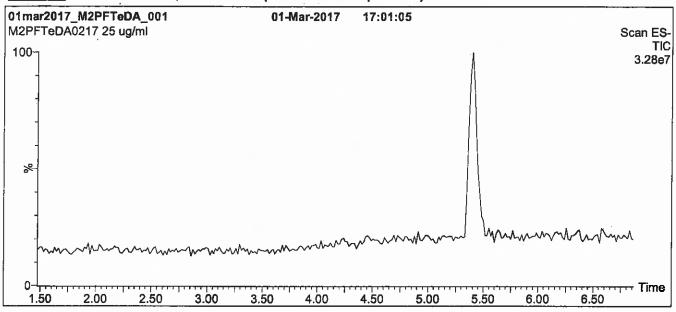
This product was produced using a Quality Management System registered to the latest versions of ISO 9001 by SAI Global, ISO/IEC 17025 by the Canadian Association for Laboratory Accreditation Inc. (CALA; A 1226), and ISO GUIDE 34 by ANSI-ASQ National Accreditation Board (ANAB; AR-1523).

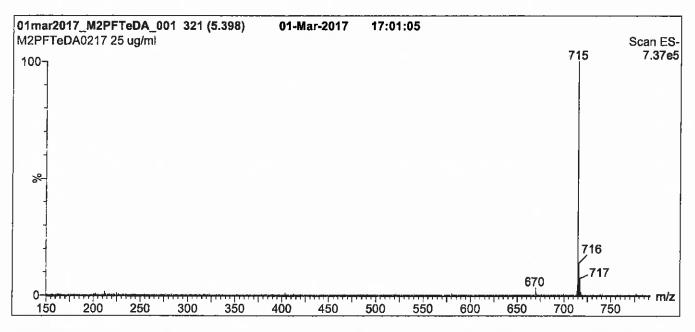


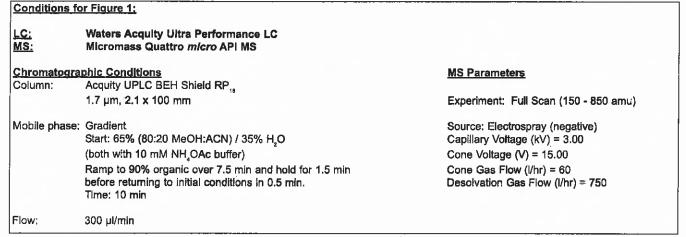


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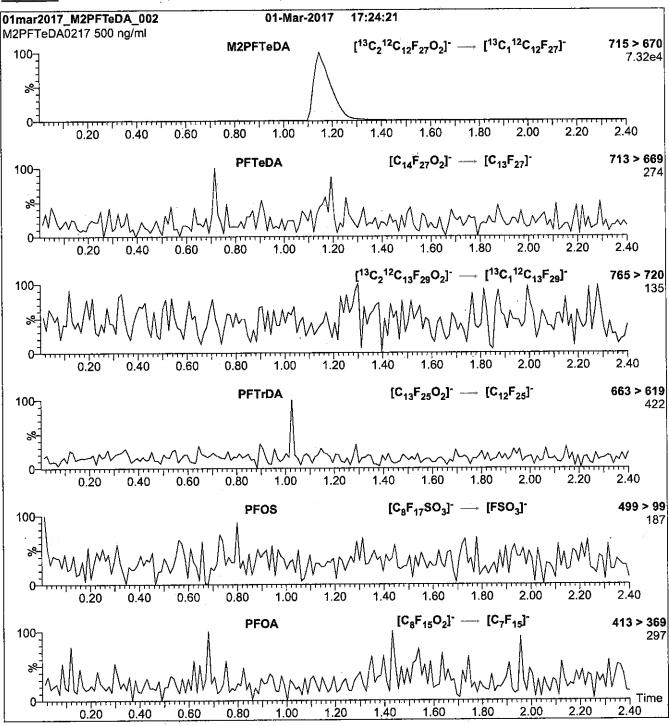
Figure 1: M2PFTeDA; LC/MS Data (TIC and Mass Spectrum)

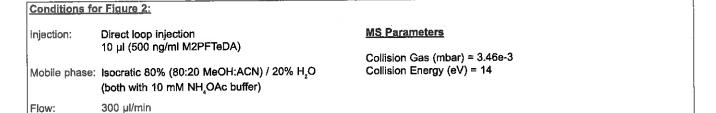






M2PFTeDA; LC/MS/MS Data (Selected MRM Transitions) Figure 2:





Flow:

LCM4PFHPA_00008



PRODUCT CODE:

M4PFHpA

Perfluoro-n-[1,2,3,4-13C]heptanoic acld

LOT NUMBER:

M4PFHpA0516

STRUCTURE:

COMPOUND:

CAS #:

Not available

MOLECULAR FORMULA:

¹³C₄¹²C₃HF₁₃O₂

F C C 13 13 C 13 C

 $50 \pm 2.5 \, \mu g/ml$

MOLECULAR WEIGHT:

368.03 Methanol

CONCENTRATION:

SOLVENT(S):

Water (<1%)

(1,2,3,4-13C,)

CHEMICAL PURITY:

>98%

ISOTOPIC PURITY:

≥99%13C

LAST TESTED: (mm/dd/ywy) EXPIRY DATE: (mm/dd/yyyy)

05/27/2016

05/27/2021

RECOMMENDED STORAGE:

Store ampoule in a cool, dark place

DOCUMENTATION/ DATA ATTACHED:

Figure 1: LC/MS Data (TIC and Mass Spectrum)

Figure 2: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

See page 2 for further details.

Contains 4 mole eq. of NaOH to prevent conversion of the carboxylic acid to the methyl ester.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By:

Date: 07/05/2016

Wellington Laboratories Inc., 345 Southgate Dr. Guelph ON N1G 3M5 CANADA 519-822-2436 • Fax: 519-822-2849 • info@well-labs.com

The products prepared by Wellington Laboratories Inc. are for laboratory use only. This certified reference material (CRM) was designed to be used as a standard for the identification and/or quantification of the specific chemical compound it contains.

HAZARDS:

This product should only be used by qualified personnel familiar with its potential hazards and trained in the handling of hazardous chemicals. Due care should be exercised to prevent unnecessary human contact or ingestion. All procedures should be carried out in a well-functioning fume hood and suitable gloves, eye protection, and clothing should be worn at all times. Waste should be disposed of according to national and regional regulations. Safety Data Sheets (SDSs) are available upon request.

SYNTHESIS / CHARACTERIZATION:

Where possible, all of our products are synthesized using single-product unambiguous routes. They are then characterized, and their structures and purities confirmed, using a combination of the most relevant techniques, such as NMR, GC/MS, LC/MS/MS, SFC/UV/MS/MS, x-ray crystallography, and melting point. Isotopic purities of mass-labelled compounds are also confirmed using HRGC/HRMS and/or LC/MS/MS.

HOMOGENEITY:

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UNCERTAINTY:

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$$u_c(y(x_1, x_2, ...x_n)) = \sqrt{\sum_{i=1}^n u(y, x_i)^2}$$

where x is expressed as a relative standard uncertainty of the individual parameter.

The individual uncertainties taken into account include those associated with weights (calibration of the balance) and volumes (calibration of the volumetric glassware). An expanded maximum combined percent relative uncertainty of $\pm 5\%$ (calculated with a coverage factor of 2 and a level of confidence of 95%) is stated on the Certificate of Analysis for all of our products.

TRACEABILITY:

All reference standard solutions are traceable to specific crystalline lots. The microbalances used for solution preparation are regularly tested by an external ISO/IEC 17025 accredited calibration company. In addition, their calibration is verified prior to each weighing using NIST and/or NRC traceable external weights. All volumetric glassware used is of Class A tolerance and has been tested according to the appropriate ASTM procedures, which are ultimately traceable to NIST. For certain products, traceability to international interlaboratory studies has also been established.

EXPIRY DATE / PERIOD OF VALIDITY:

Ongoing stability studies of this product have demonstrated stability in its composition and concentration, until the specified expiry date, in the unopened ampoule. Monitoring for any degradation or change in concentration of the listed analyte(s) is performed on a routine basis.

LIMITED WARRANTY:

At the time of shipment, all products are warranted to be free of defects in material and workmanship and to conform to the stated technical and purity specifications.

QUALITY MANAGEMENT:

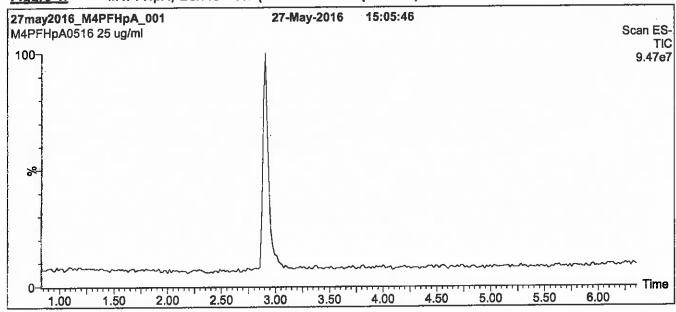
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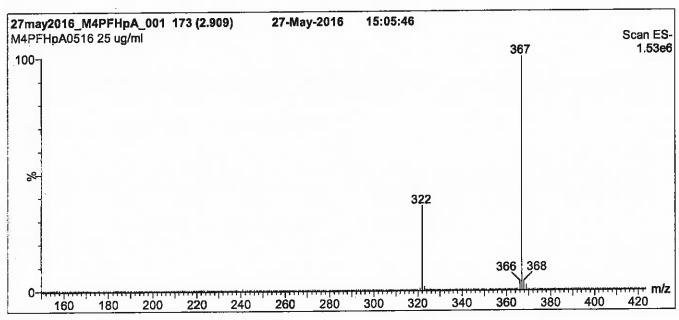




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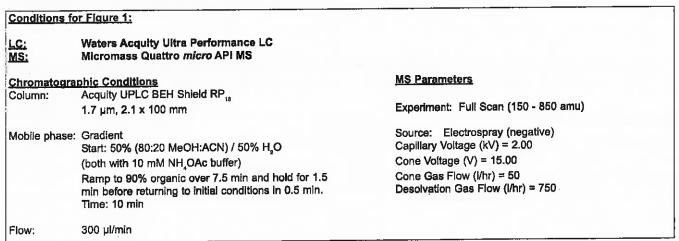
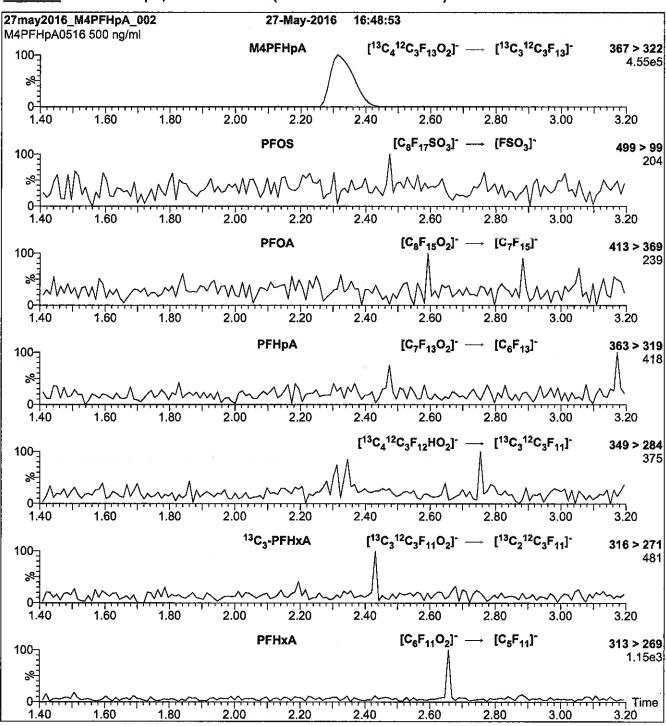
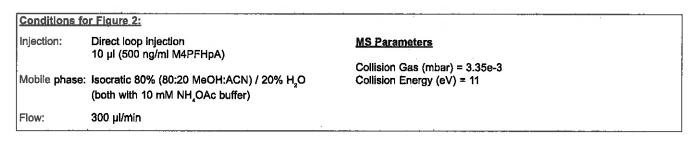


Figure 2: M4PFHpA; LC/MS/MS Data (Selected MRM Transitions)





LCM4PFHPA_00009



PRODUCT CODE:

M4PFHpA

LOT NUMBER:

M4PFHpA0516

COMPOUND:

Perfluoro-n-[1,2,3,4-13C]heptanoic acid

STRUCTURE:

CAS #:

Not available

MOLECULAR FORMULA:

¹³C₄¹²C₃HF₁₃O₂

 $50 \pm 2.5 \, \mu g/ml$

MOLECULAR WEIGHT: SOLVENT(S):

368.03 Methanoi

CHEMICAL PURITY:

CONCENTRATION:

>98%

LAST TESTED: (mm/dd/yyyy) 05/27/2016

EXPIRY DATE: (mm/dd/yyyy)

05/27/2021

RECOMMENDED STORAGE:

Store ampoule in a cool, dark place

ISOTOPIC PURITY:

Water (<1%) ≥99%13C

(1,2,3,4-13C₄)

DOCUMENTATION/ DATA ATTACHED:

Figure 1: LC/MS Data (TIC and Mass Spectrum)

Figure 2: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

See page 2 for further details.

Contains 4 mole eq. of NaOH to prevent conversion of the carboxylic acid to the methyl ester.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By:

Date: <u>07/05/2016</u>

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SYNTHESIS / CHARACTERIZATION:

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EXPIRY DATE / PERIOD OF VALIDITY:

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LIMITED WARRANTY:

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QUALITY MANAGEMENT:

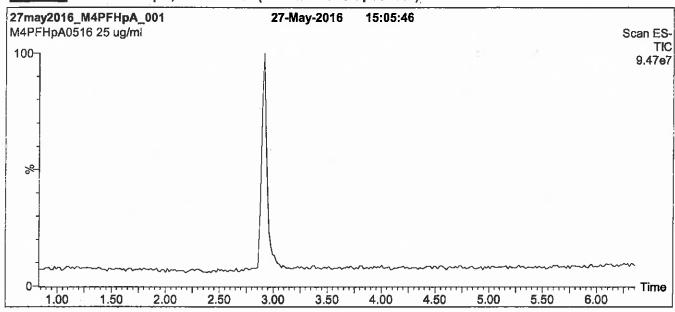
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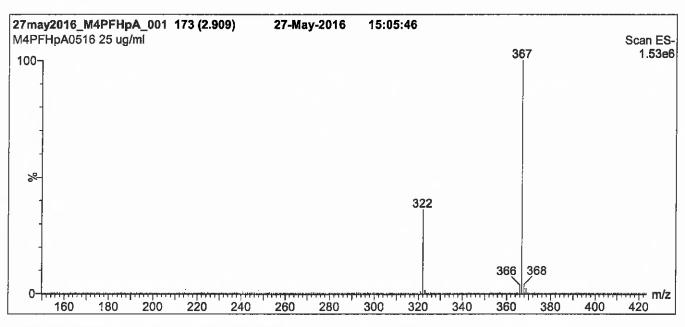




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Figure 1: M4PFHpA; LC/MS Data (TIC and Mass Spectrum)





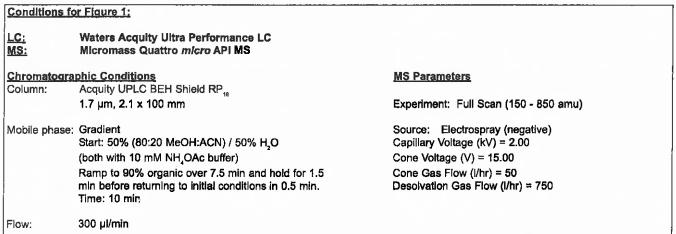
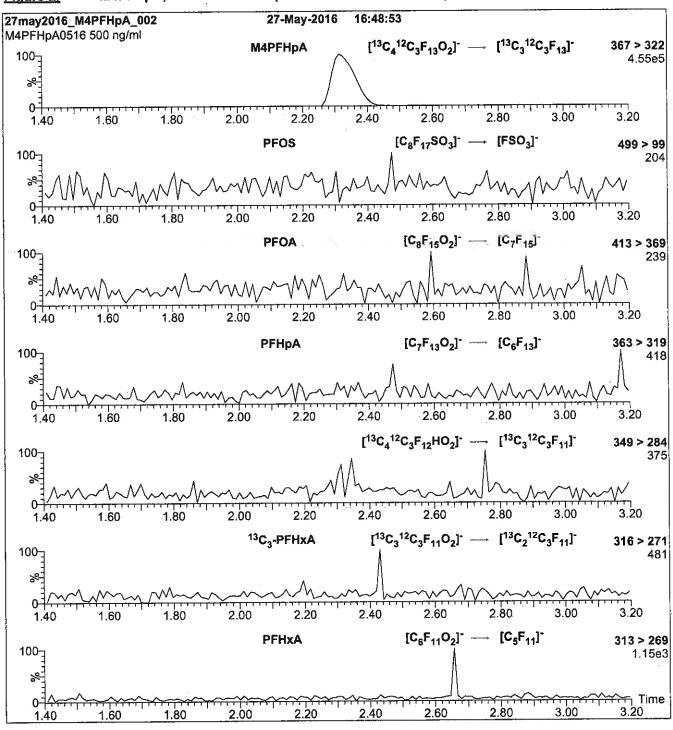
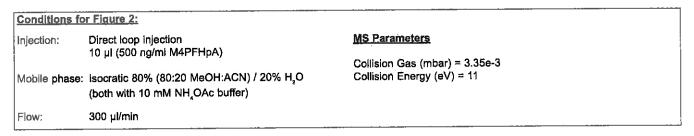


Figure 2: M4PFHpA; LC/MS/MS Data (Selected MRM Transitions)





LCM5PFPEA_00009



PRODUCT CODE:

M5PFPeA

LOT NUMBER:

M5PFPeA1116

COMPOUND:

Perfluoro-n-[13C_]pentanoic acid

STRUCTURE:

CAS #:

Not available

MOLECULAR FORMULA:

¹³C,HF_aO_a

MOLECULAR WEIGHT: SOLVENT(S): 269.01

50 ± 2.5 μg/ml

Methanoi

._____

Water (<1%)

CHEMICAL PURITY:

CONCENTRATION:

>98%

ISOTOPIC PURITY:

≥99% ¹³C

 $(^{13}C_{5})$

LAST TESTED: (mm/dd/yyyy)

11/22/2016

EXPIRY DATE: (mm/dd/yyyy)

11/22/2021

RECOMMENDED STORAGE:

Store ampoule in a cool, dark place

DOCUMENTATION/ DATA ATTACHED:

Figure 1: LC/MS Data (TIC and Mass Spectrum)

Figure 2: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

See page 2 for further details.

Contains 4 mole eq. of NaOH to prevent conversion of the carboxylic acid to the methyl ester.

Contains < 0.1% of perfluoro-n-pentanoic acid.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By:

B.G. Chittim

Date:

12/09/2016

Wellington Laboratories Inc., 345 Southgate Dr. Guelph ON N1G 3M5 CANADA 519-822-2436 • Fax: 519-822-2849 • info@well-labs.com

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SYNTHESIS / CHARACTERIZATION:

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LIMITED WARRANTY:

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QUALITY MANAGEMENT:

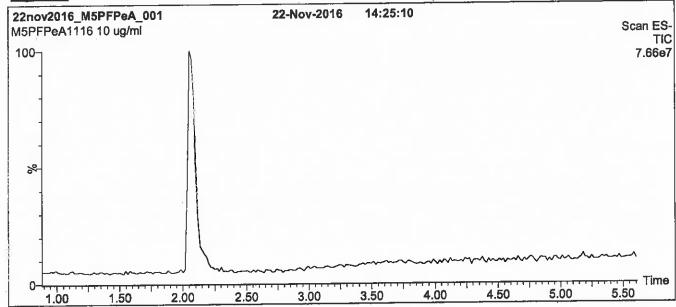
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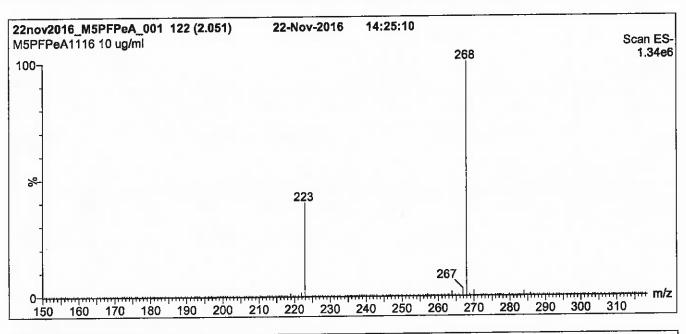




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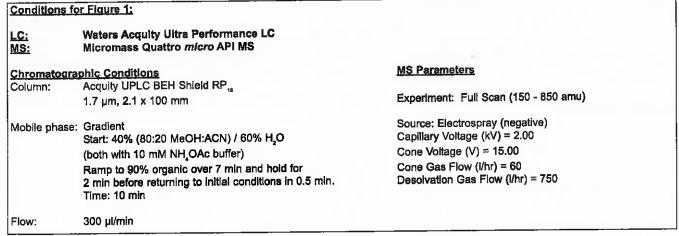
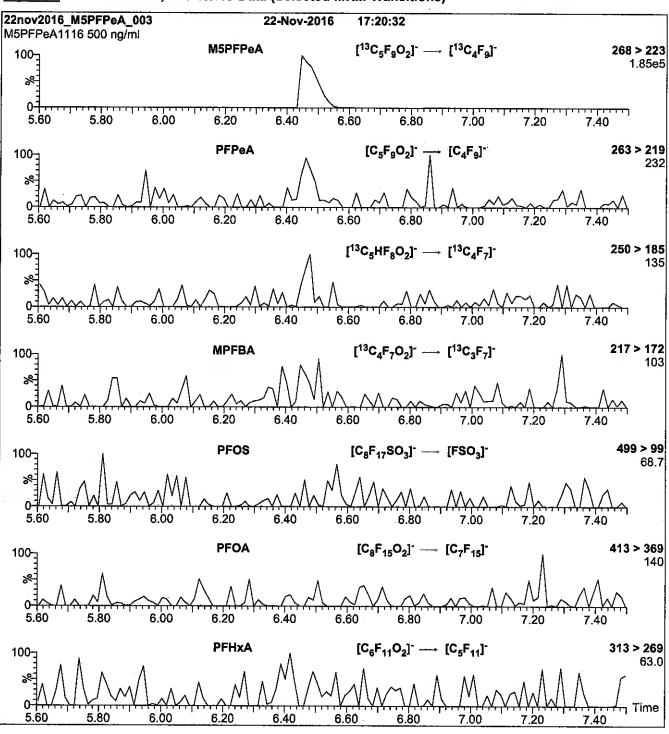


Figure 2: M5PFPeA; LC/MS/MS Data (Selected MRM Transitions)





Injection:

Direct loop injection

10 μi (500 ng/ml M5PFPeA)

Mobile phase: Isocratic 80% (80:20 MeOH:ACN) / 20% H₂O

(both with 10 mM NH,OAc buffer)

Flow:

300 µl/min

MS Parameters

Collision Gas (mbar) = 3,46e-3 Collision Energy (eV) = 9

LCM5PFPEA_00010



PRODUCT CODE:

M5PFPeA

Perfluoro-n-[13C]pentanoic acid

LOT NUMBER:

M5PFPeA1116

STRUCTURE:

COMPOUND:

CAS #:

Not available

MOLECULAR FORMULA:

¹³C₅HF₈O₃

MOLECULAR WEIGHT:

269.01

CONCENTRATION:

 $50 \pm 2.5 \, \mu g/ml$

SOLVENT(S):

Methanol Water (<1%)

ISOTOPIC PURITY:

≥99% ¹³C

(13C_c)

CHEMICAL PURITY: LAST TESTED: (mm/dd/yyyy) >98%

11/22/2016

EXPIRY DATE: (mm/dd/yyyy)

11/22/2021

RECOMMENDED STORAGE:

Store ampoule in a cool, dark place

DOCUMENTATION/ DATA ATTACHED:

Figure 1: LC/MS Data (TIC and Mass Spectrum)

Figure 2: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

See page 2 for further details.

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FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By:

Date: 12/09/2016

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QUALITY MANAGEMENT:

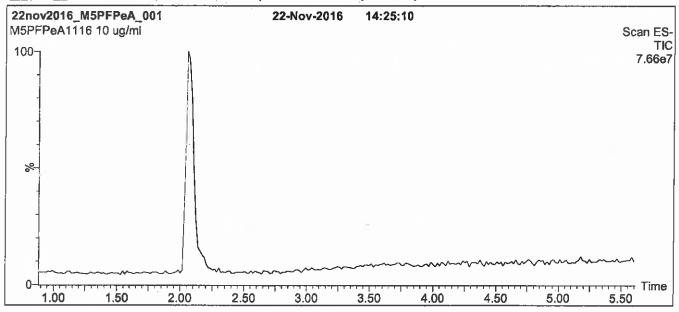
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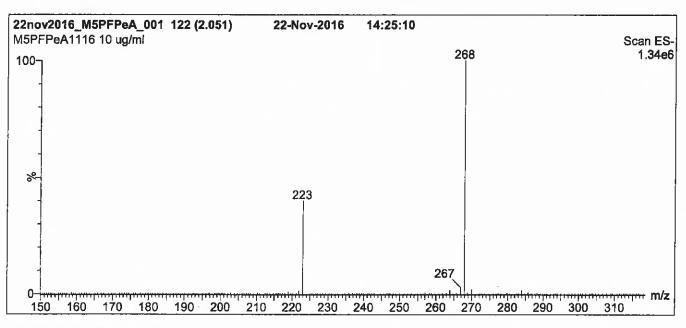


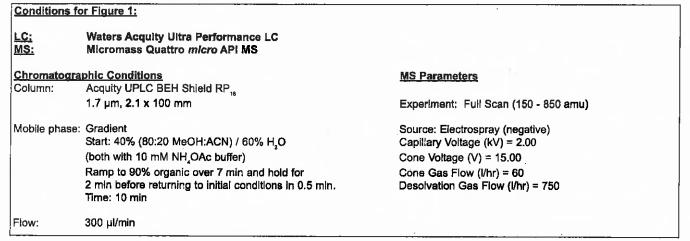


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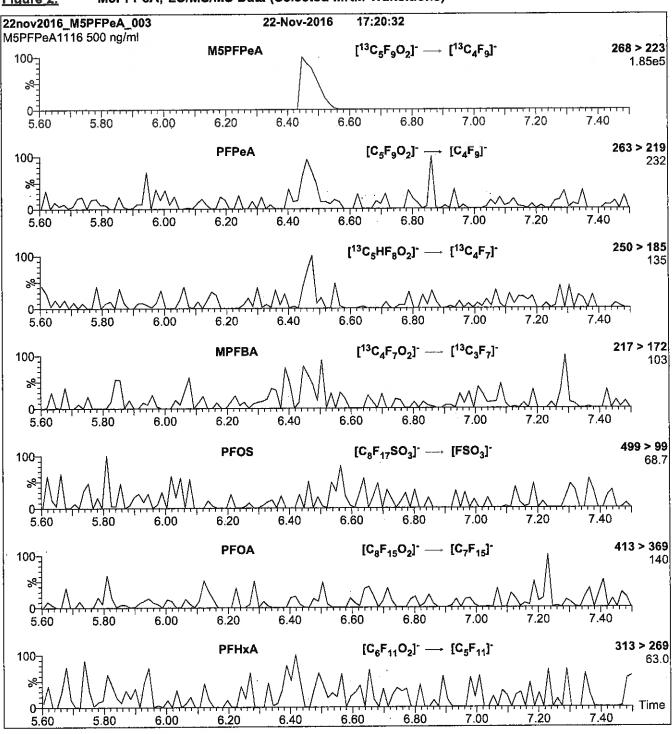
Figure 1: M5PFPeA; LC/MS Data (TIC and Mass Spectrum)

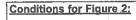






M5PFPeA; LC/MS/MS Data (Selected MRM Transitions) Figure 2:





Injection:

Direct loop injection

10 μl (500 ng/ml M5PFPeA)

Mobile phase: Isocratic 80% (80:20 MeOH:ACN) / 20% H₂O

(both with 10 mM NH,OAc buffer)

300 µl/min Flow:

MS Parameters

Collision Gas (mbar) = 3.46e-3

Collision Energy (eV) = 9

LCM8FOSA_00012



PRODUCT CODE:

M8FOSA-I

Perfluoro-1-[13C_loctanesulfonamide

LOT NUMBER:

M8FOSA1215I

STRUCTURE:

COMPOUND:

CAS #:

Not available

MOLECULAR FORMULA:

¹³C_kH_sF_s,NO_sS

CONCENTRATION:

 $50 \pm 2.5 \,\mu g/ml$

CHEMICAL PURITY:

>98%

LAST TESTED: (mm/dd/yyyy)

12/22/2015

EXPIRY DATE: (mm/dd/yyyy)

12/22/2020

RECOMMENDED STORAGE:

Refrigerate ampoule

MOLECULAR WEIGHT:

SOLVENT(S):

507.09 Isopropanol

ISOTOPIC PURITY:

>99% 13C

(13C_a)

DOCUMENTATION/ DATA ATTACHED:

Figure 1: LC/MS Data (TIC and Mass Spectrum)

Figure 2: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

See page 2 for further details.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By:

Date: 12/13/2016 (mm/dd/yyyy)

Wellington Laboratories Inc., 345 Southgate Dr. Guelph ON N1G 3M5 CANADA 519-822-2436 • Fax: 519-822-2849 • info@well-labs.com

The products prepared by Wellington Laboratories Inc. are for laboratory use only. This certified reference material (CRM) was designed to be used as a standard for the identification and/or quantification of the specific chemical compound it contains.

HAZARDS;

This product should only be used by qualified personnel familiar with its potential hazards and trained in the handling of hazardous chemicals. Due care should be exercised to prevent unnecessary human contact or ingestion. All procedures should be carried out in a well-functioning fume hood and suitable gloves, eye protection, and clothing should be worn at all times. Waste should be disposed of according to national and regional regulations. Safety Data Sheets (SDSs) are available upon request.

SYNTHESIS / CHARACTERIZATION:

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UNCERTAINTY:

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The combined relative standard uncertainty, $u_c(y)$, of a value y and the uncertainty of the independent parameters

 $x_i, x_j ... x_n$ on which it depends is:

$$u_c(y(x_1,x_2,...x_n)) = \sqrt{\sum_{i=1}^n u(y,x_i)^2}$$

where x is expressed as a relative standard uncertainty of the individual parameter.

The individual uncertainties taken into account include those associated with weights (calibration of the balance) and volumes (calibration of the volumetric glassware). An expanded maximum combined percent relative uncertainty of $\pm 5\%$ (calculated with a coverage factor of 2 and a level of confidence of 95%) is stated on the Certificate of Analysis for all of our products.

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EXPIRY DATE / PERIOD OF VALIDITY:

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LIMITED WARRANTY:

At the time of shipment, all products are warranted to be free of defects in material and workmanship and to conform to the stated technical and purity specifications.

QUALITY MANAGEMENT:

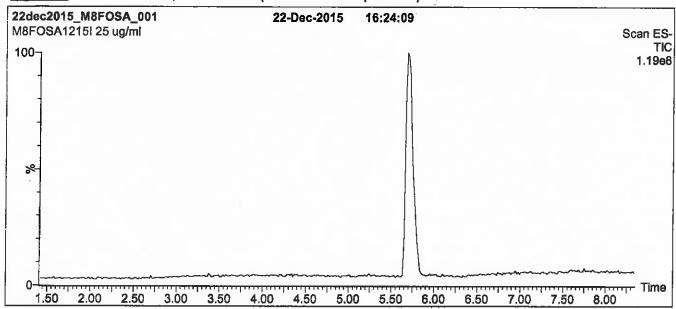
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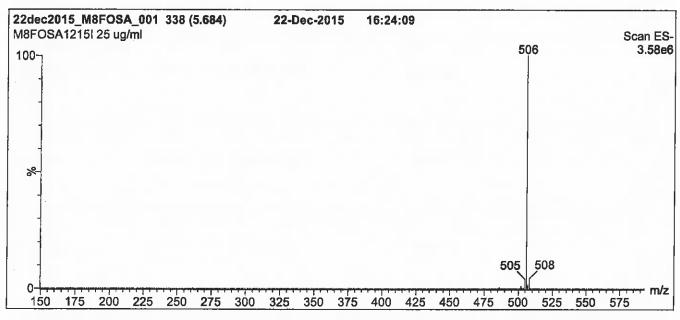




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Figure 1: M8FOSA-I; LC/MS Data (TIC and Mass Spectrum)





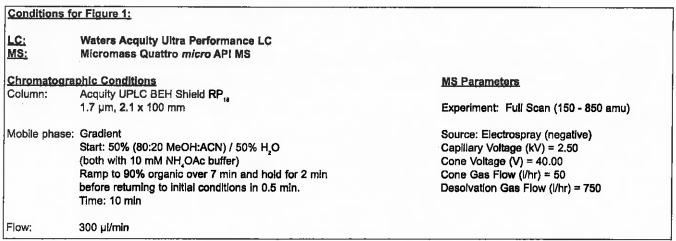
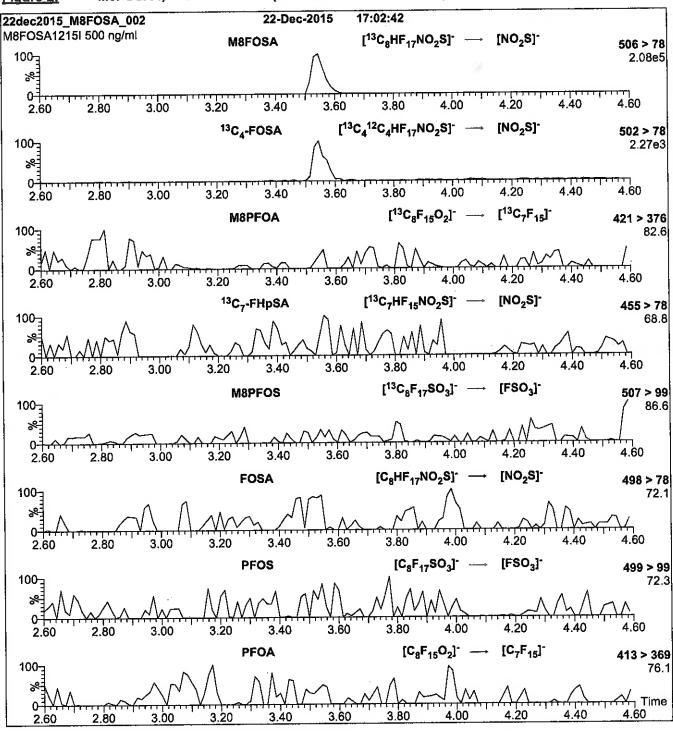
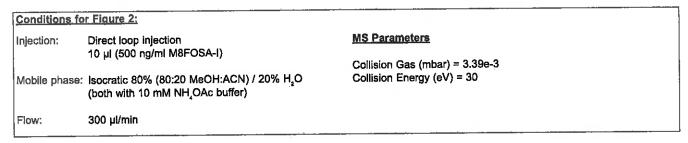


Figure 2: M8FOSA-I; LC/MS/MS Data (Selected MRM Transitions)





LCM8FOSA_00013



PRODUCT CODE:

M8FOSA-I

COMPOUND:

Perfluoro-1-[13C] octanesulfonamide

LOT NUMBER:

M8FOSA1215I

STRUCTURE:

<u>CAS #:</u>

Not available

MOLECULAR FORMULA:

¹³C₈H₂F₁₇NO₂S

CONCENTRATION:

 $50 \pm 2.5 \, \mu g/ml$

CHEMICAL PURITY:

>98%

LAST TESTED: (mm/dd/yyyy)

12/22/2015

EXPIRY DATE: (mm/dd/yyyy)

12/22/2020

RECOMMENDED STORAGE:

Refrigerate ampoule

MOLECULAR WEIGHT:

SOLVENT(S):

ISOTOPIC PURITY:

507.09 Isopropanol

≥99% 13C

(13C_a)

DOCUMENTATION/ DATA ATTACHED:

Figure 1: LC/MS Data (TIC and Mass Spectrum)

Figure 2: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

See page 2 for further details.

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LIMITED WARRANTY:

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QUALITY MANAGEMENT:

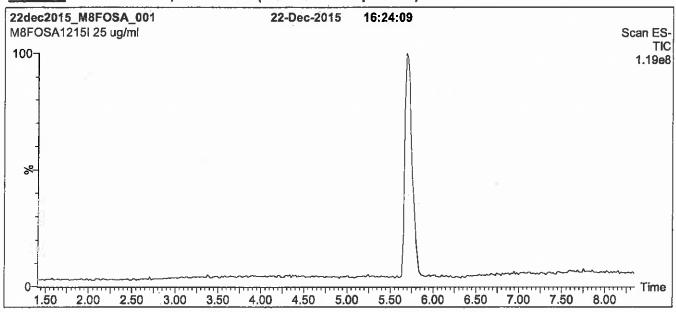
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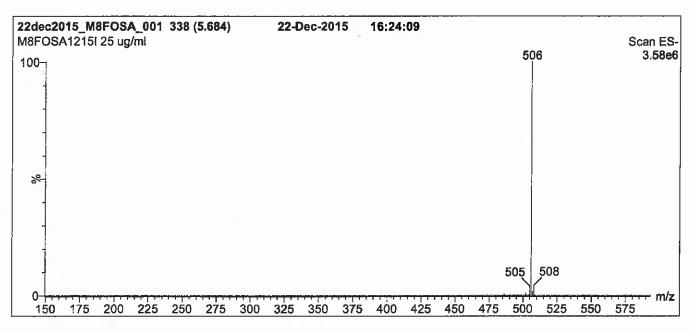




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Figure 1: M8FOSA-I; LC/MS Data (TIC and Mass Spectrum)





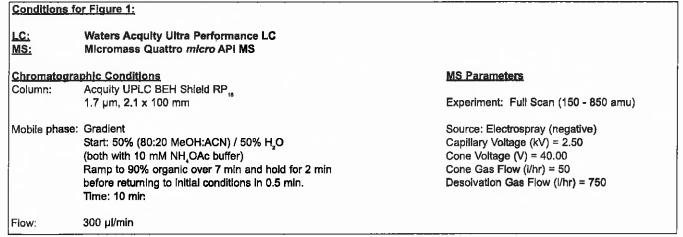
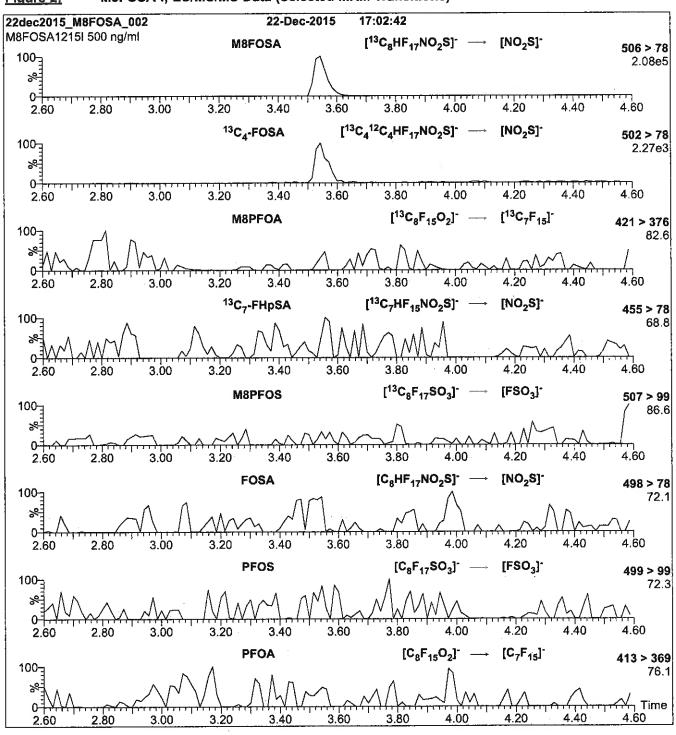
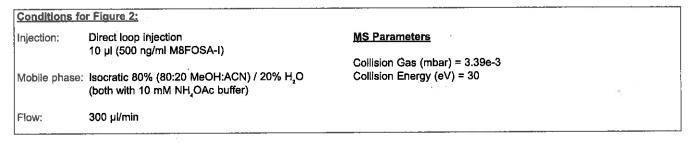


Figure 2: M8FOSA-I; LC/MS/MS Data (Selected MRM Transitions)





LCMPFBA_00009



PRODUCT CODE:

MPFBA

Perfluoro-n-[1,2,3,4-13C₄]butanoic acid

LOT NUMBER:

MPFBA0516

STRUCTURE:

COMPOUND:

CAS #:

Not available

F F F F

MOLECULAR FORMULA:

¹³C₄HF₂O₂

MOLECULAR WEIGHT:

218.01

CONCENTRATION:

50 ± 2.5 µg/ml

SOLVENT(S):

Methanol Water (<1%)

CHEMICAL PURITY:

>98%

ISOTOPIC PURITY:

≥99%¹³C

LAST TESTED: (mm/dd/yyyy)

05/24/2016

EXPIRY DATE: (mm/dd/yyy)

05/24/2021

RECOMMENDED STORAGE:

Store ampoule in a cool, dark place

(1,2,3,4-13C₄)

DOCUMENTATION/ DATA ATTACHED:

Figure 1: LC/MS Data (TIC and Mass Spectrum)

Figure 2: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

See page 2 for further details.

Contains 4 mole eq. of NaOH to prevent conversion of the carboxylic acid to the methyl ester.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By:

B.G. Chittim

Date: <u>05/30/2016</u>

(mm/dd/www)

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LIMITED WARRANTY:

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QUALITY MANAGEMENT:

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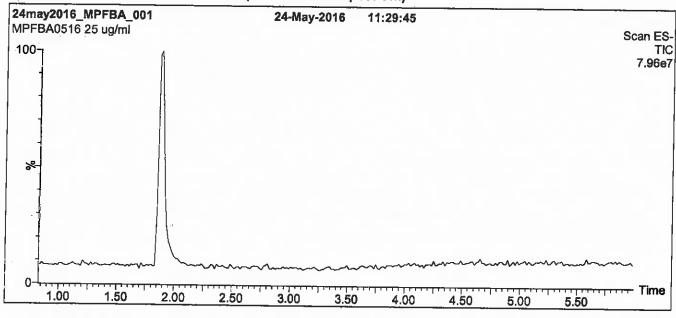


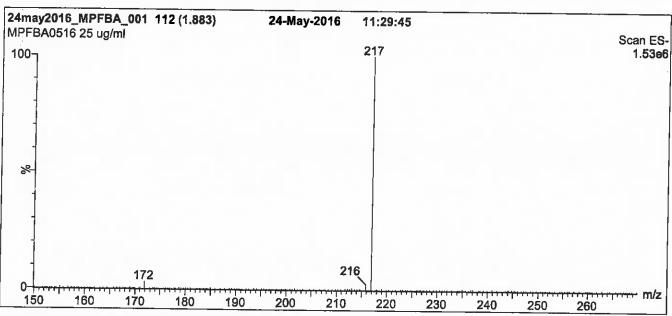


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MPFBA0516 (2 of 4)

Figure 1: MPFBA; LC/MS Data (TIC and Mass Spectrum)





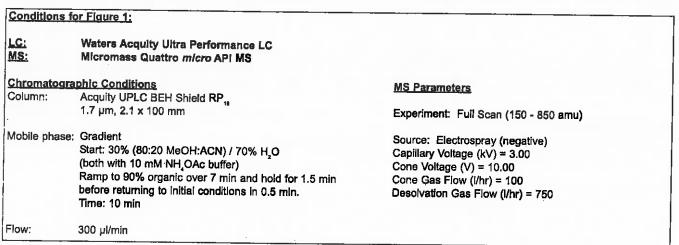
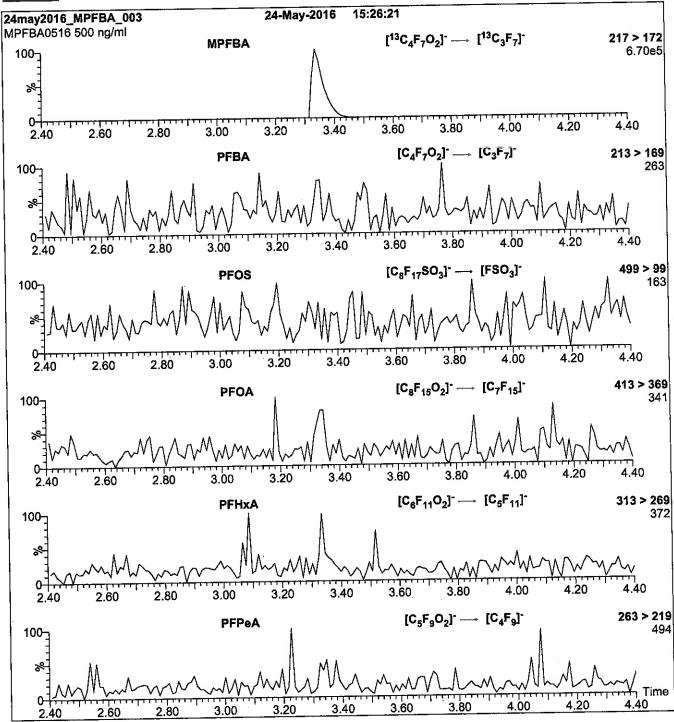
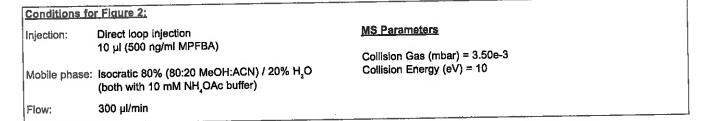


Figure 2: MPFBA; LC/MS/MS Data (Selected MRM Transitions)





LCMPFBA_00010



PRODUCT CODE:

MPFBA

LOT NUMBER:

MPFBA0516

COMPOUND:

Perfluoro-n-[1,2,3,4-13C] butanoic acid

STRUCTURE:

CAS #:

Not available

MOLECULAR FORMULA:

¹³C₄HF₂O₃

MOLECULAR WEIGHT:

218.01

CONCENTRATION:

 $50 \pm 2.5 \, \mu g/ml$

SOLVENT(S):

Methanol Water (<1%)

CHEMICAL PURITY:

>98%

ISOTOPIC PURITY:

≥99%13C

LAST TESTED: (mm/dd/yyyy)

05/24/2016

(1,2,3,4-13C₄)

EXPIRY DATE: (mrv/dd/yyyy)

05/24/2021

RECOMMENDED STORAGE:

Store ampoule in a cool, dark place

DOCUMENTATION/ DATA ATTACHED:

Figure 1: LC/MS Data (TIC and Mass Spectrum)

Figure 2: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

See page 2 for further details.

Contains 4 mole eq. of NaOH to prevent conversion of the carboxylic acid to the methyl ester.

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Certified By:

Date: 05/30/2016

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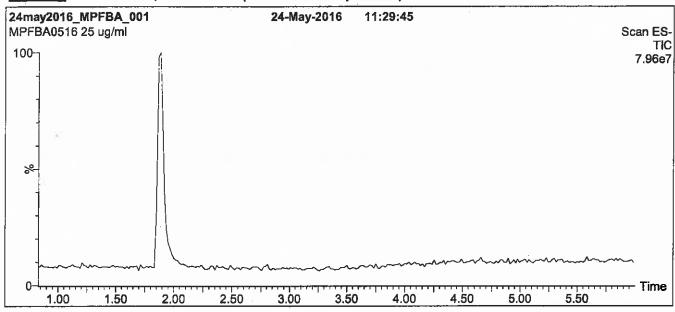
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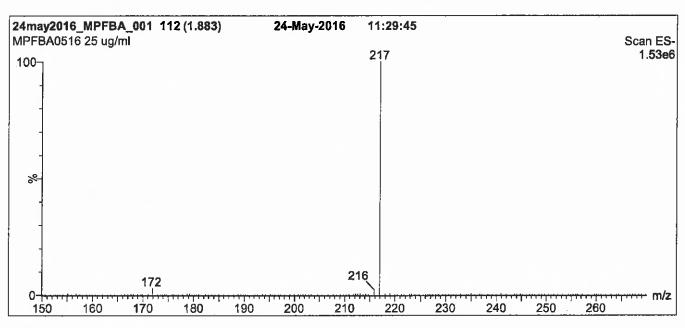


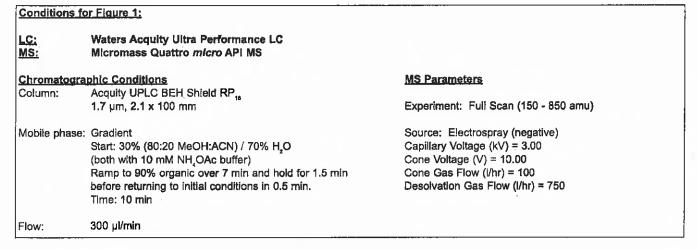


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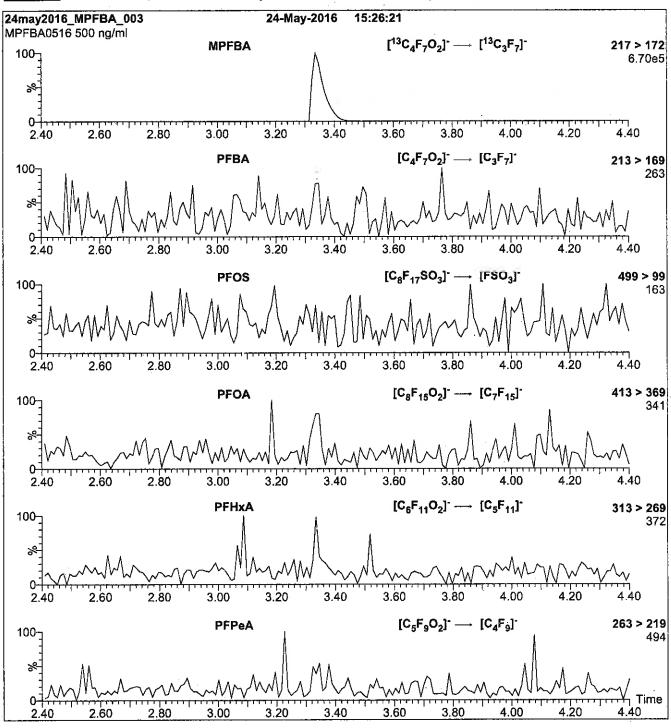
Figure 1: MPFBA; LC/MS Data (TIC and Mass Spectrum)

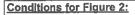






MPFBA; LC/MS/MS Data (Selected MRM Transitions) Figure 2:





Injection:

Flow:

Direct loop injection

10 μl (500 ng/ml MPFBA)

Mobile phase: Isocratic 80% (80:20 MeOH:ACN) / 20% H₂O

(both with 10 mM NH OAc buffer)

300 µl/min

MS Parameters

Collision Gas (mbar) = 3.50e-3

Collision Energy (eV) = 10

LCMPFBS_00002







PRODUCT CODE:

M3PFBS

LOT NUMBER:

M3PFBS0815

COMPOUND:

Sodium perfluoro-1-[2,3,4-13C,]butanesulfonate

STRUCTURE:

CAS #:

Not available

¹³C₃¹²CF₉SO₃Na

MOLECULAR WEIGHT:

325.06

CONCENTRATION:

 $50.0 \pm 2.5 \,\mu g/ml$ (Na salt)

SOLVENT(S):

Methanol

CHEMICAL PURITY:

>98%

ISOTOPIC PURITY:

≥99% ¹³C (2,3,4-13C₂)

LAST TESTED: (mm/dd/yyyy) EXPIRY DATE: (mm/dd/yyy)

08/02/2016

MOLECULAR FORMULA:

08/02/2021

RECOMMENDED STORAGE:

Store ampoule in a cool, dark place

 $46.5 \pm 2.3 \mu g/ml$ (M3PFBS anion)

DOCUMENTATION/ DATA ATTACHED:

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Figure 2: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

See page 2 for further details.

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HOMOGENEITY:

Prior to solution preparation, crystalline material is tested for homogeneity using a variety of techniques (as stated above) and its solubility in a given diluent is taken into consideration. Duplicate solutions of a new product are prepared from the same crystalline lot and, after the addition of an appropriate internal standard, they are compared by GC/MS, LC/MS/MS and/or SFC/UV/MS/MS. The relative response factors of the analyte of interest in each solution are required to be <5% RSD. New solution lots of existing products are compared to older lots in the same manner, which further confirms the homogeneity of the crystalline material as well as the stability and homogeneity of the solutions in the storage containers.

UNCERTAINTY:

The maximum combined relative standard uncertainty of our reference standard solutions is calculated using the following equation:

The combined relative standard uncertainty, $u_c(y)$, of a value y and the uncertainty of the independent parameters

 $x_1, x_2,...x_n$ on which it depends is:

$$u_c(y(x_1, x_2, ...x_n)) = \sqrt{\sum_{i=1}^n u(y, x_i)^2}$$

where x is expressed as a relative standard uncertainty of the individual parameter.

The individual uncertainties taken into account include those associated with weights (calibration of the balance) and volumes (calibration of the volumetric glassware). An expanded maximum combined percent relative uncertainty of $\pm 5\%$ (calculated with a coverage factor of 2 and a level of confidence of 95%) is stated on the Certificate of Analysis for all of our products.

TRACEABILITY:

All reference standard solutions are traceable to specific crystalline lots. The microbalances used for solution preparation are regularly tested by an external ISO/IEC 17025 accredited calibration company. In addition, their calibration is verified prior to each weighing using NIST and/or NRC traceable external weights. All volumetric glassware used is of Class A tolerance and has been tested according to the appropriate ASTM procedures, which are ultimately traceable to NIST. For certain products, traceability to international interlaboratory studies has also been established.

EXPIRY DATE / PERIOD OF VALIDITY:

Ongoing stability studies of this product have demonstrated stability in its composition and concentration, until the specified expiry date, in the unopened ampoule. Monitoring for any degradation or change in concentration of the listed analyte(s) is performed on a routine basis.

LIMITED WARRANTY:

At the time of shipment, all products are warranted to be free of defects in material and workmanship and to conform to the stated technical and purity specifications.

QUALITY MANAGEMENT:

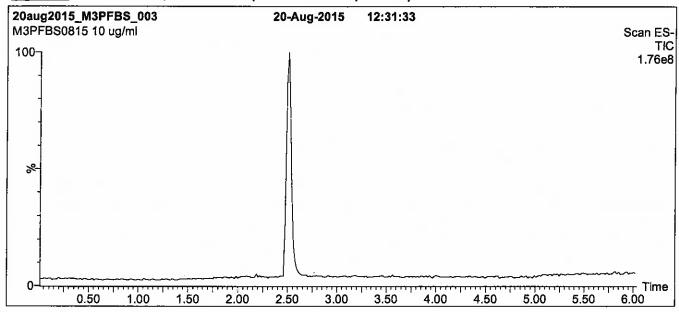
This product was produced using a Quality Management System registered to the latest versions of ISO 9001 by SAI Global, ISO/IEC 17025 by the Canadian Association for Laboratory Accreditation Inc. (CALA; A 1226), and ISO GUIDE 34 by ANSI-ASQ National Accreditation Board (ANAB; AR-1523).

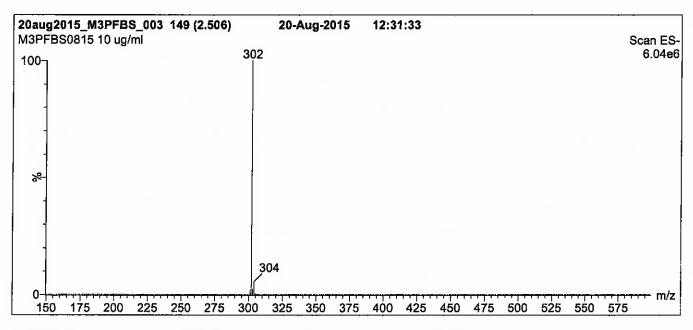


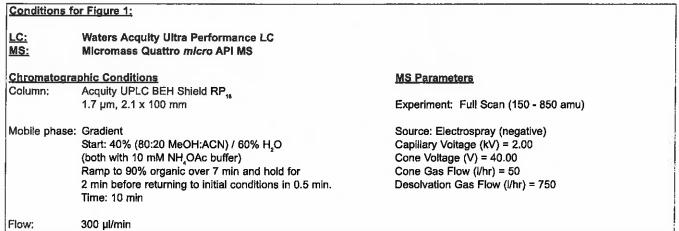


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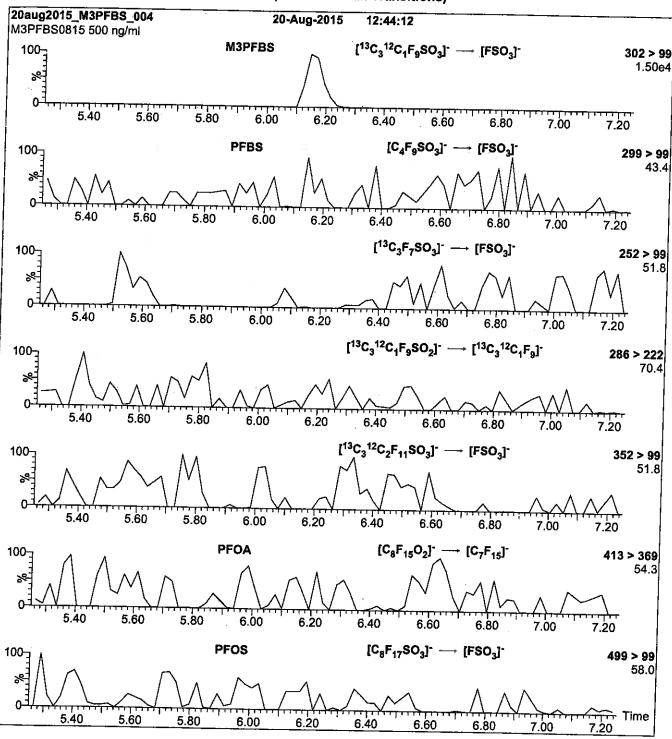
Figure 1: M3PFBS; LC/MS Data (TIC and Mass Spectrum)

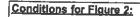






M3PFBS; LC/MS/MS Data (Selected MRM Transitions) Figure 2:





Injection:

Direct loop injection

10 µl (500 ng/ml M3PFBS)

Mobile phase: Isocratic 80% (80:20 MeOH:ACN) / 20% H₂O

(both with 10 mM NH, OAc buffer)

MS Parameters

Collision Gas (mbar) = 3.31e-3 Collision Energy (eV) = 25

Flow:

300 µl/min

LCMPFBS_00003



PRODUCT CODE:

M3PFBS

LOT NUMBER:

M3PFBS0815

COMPOUND:

Sodium perfluoro-1-[2,3,4-13C,]butanesulfonate

STRUCTURE:

CAS #:

Not available

MOLECULAR FORMULA:

¹³C, ¹²CF_aSO,Na

 $50.0 \pm 2.5 \,\mu g/ml$ (Na salt)

 $46.5 \pm 2.3 \,\mu\text{g/ml}$ (M3PFBS anion)

CHEMICAL PURITY:

CONCENTRATION:

LAST TESTED: (mm/dd/yyyy)

EXPIRY DATE: (mm/dd/yyyy)

>98%

08/02/2016

RECOMMENDED STORAGE:

08/02/2021 Store ampoule in a cool, dark place

SOLVENT(S):

Methanol

325.06

ISOTOPIC PURITY:

MOLECULAR WEIGHT:

≥99% 13C

(2,3,4-13C₃)

DOCUMENTATION/ DATA ATTACHED:

Figure 1: LC/MS Data (TIC and Mass Spectrum)

Figure 2: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

See page 2 for further details.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified Bv:

Date: 08/05/2016

The products prepared by Wellington Laboratories Inc. are for laboratory use only. This certified reference material (CRM) was designed to be used as a standard for the identification and/or quantification of the specific chemical compound it contains.

HAZARDS:

This product should only be used by qualified personnel familiar with its potential hazards and trained in the handling of hazardous chemicals. Due care should be exercised to prevent unnecessary human contact or ingestion. All procedures should be carried out in a well-functioning fume hood and suitable gloves, eye protection, and clothing should be worn at all times. Waste should be disposed of according to national and regional regulations. Safety Data Sheets (SDSs) are available upon request.

SYNTHESIS / CHARACTERIZATION:

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LIMITED WARRANTY:

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QUALITY MANAGEMENT:

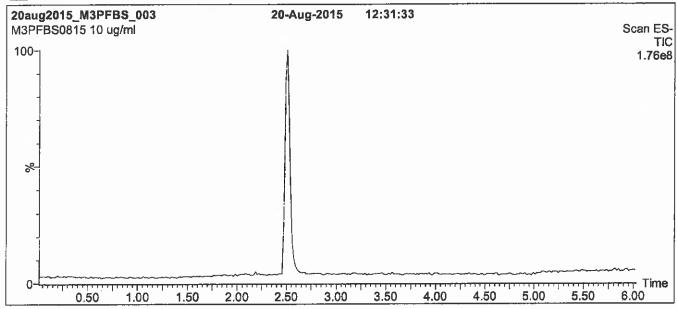
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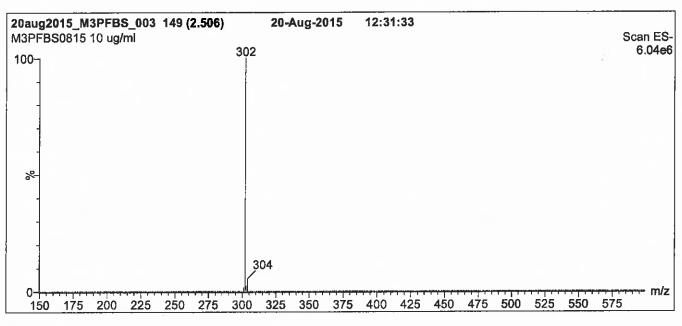




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Figure 1: M3PFBS; LC/MS Data (TIC and Mass Spectrum)





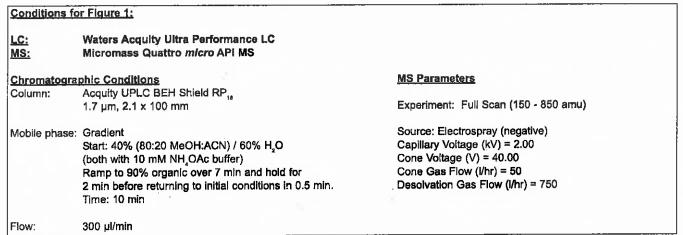
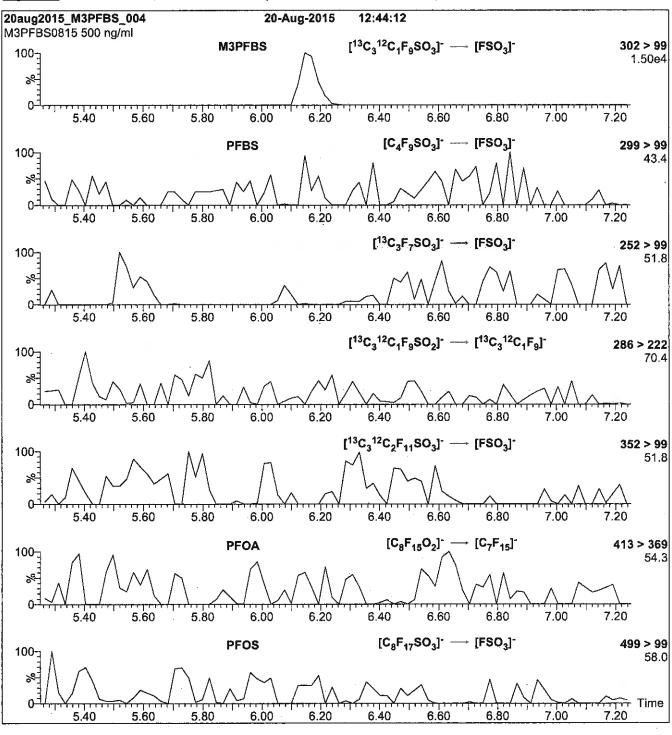
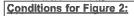


Figure 2: M3PFBS; LC/MS/MS Data (Selected MRM Transitions)





Injection:

Direct loop injection

10 µl (500 ng/ml M3PFBS)

Mobile phase: Isocratic 80% (80:20 MeOH:ACN) / 20% H,O

(both with 10 mM NH,OAc buffer)

MS Parameters

Collision Gas (mbar) = 3.31e-3 Collision Energy (eV) = 25

Flow:

300 µl/min

LCMPFDA_00013



PRODUCT CODE:

MPFDA

LOT NUMBER:

MPFDA0916

COMPOUND:

Perfluoro-n-[1,2-13C₂]decanoic acid

STRUCTURE:

CAS#:

Not available

MOLECULAR FORMULA:

¹³C₂¹²C₈HF₁₈O₂

MOLECULAR WEIGHT:

516.07

CONCENTRATION:

 $50 \pm 2.5 \,\mu g/ml$

SOLVENT(S):

Methanol

CHEMICAL PURITY:

>98%

Water (<1%) ≥99% 13C

LAST TESTED: (mm/dd/yyyy)

09/30/2016

EXPIRY DATE; (mm/dd/yyyy)

09/30/2021

RECOMMENDED STORAGE:

Store ampoule in a cool, dark place

ISOTOPIC PURITY:

(1,2-13C,)

DOCUMENTATION/ DATA ATTACHED:

Figure 1: LC/MS Data (TIC and Mass Spectrum)

Figure 2: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

See page 2 for further details.

Contains 4 mole eq. of NaOH to prevent conversion of the carboxylic acid to the methyl ester.

Contains < 0.1% of ¹³C₁-PFNA.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By:

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HAZARDS:

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, x_a ... x_a on which it depends is:

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LIMITED WARRANTY:

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QUALITY MANAGEMENT:

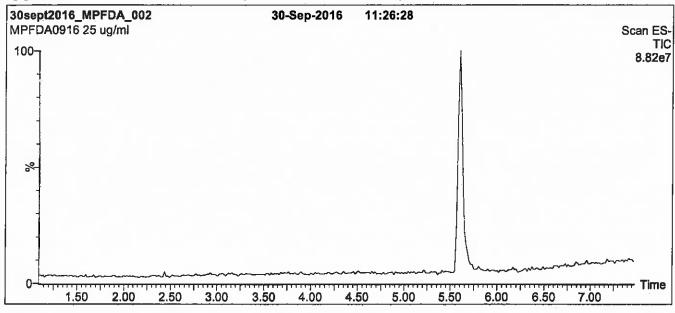
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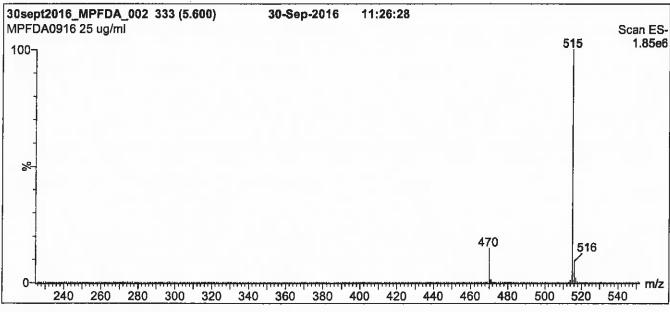




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Figure 1: MPFDA; LC/MS Data (TIC and Mass Spectrum)





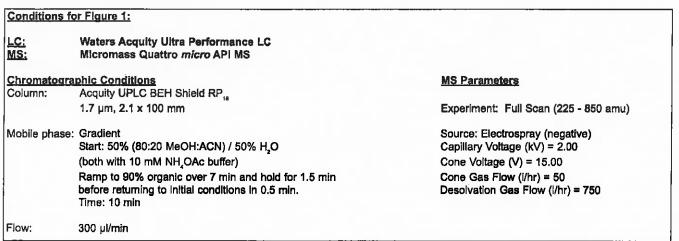
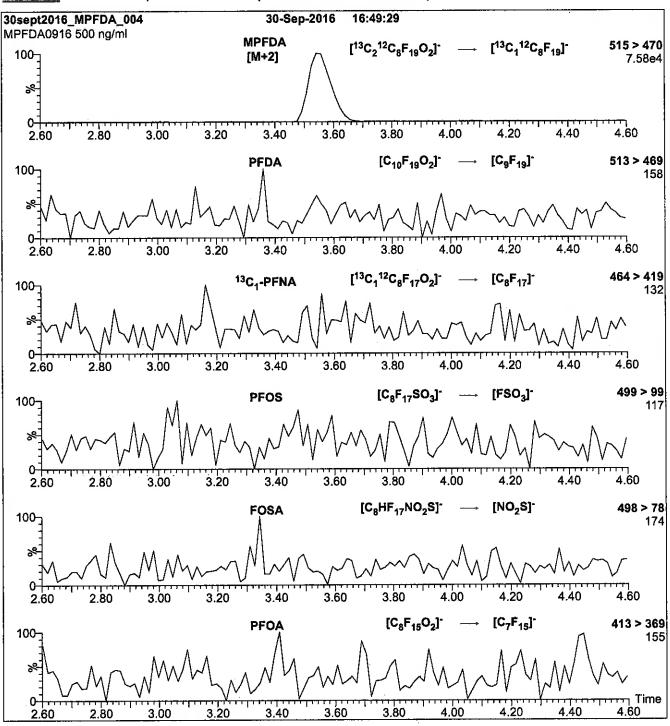


Figure 2: MPFDA; LC/MS/MS Data (Selected MRM Transitions)





Injection:

Direct loop injection

10 µl (500 ng/ml MPFDA)

Mobile phase: Isocratic 80% (80:20 MeOH:ACN) / 20% H,O

(both with 10 mM NH₄OAc buffer)

Flow:

300 µl/min

MS Parameters

Collision Gas (mbar) = 3.31e-3 Collision Energy (eV) = 13

LCMPFDA_00015



PRODUCT CODE:

MPFDA

LOT NUMBER:

MPFDA0916

COMPOUND:

Perfluoro-n-[1,2-13C] decanoic acid

STRUCTURE:

CAS #:

Not available

MOLECULAR FORMULA:

13C, 12C, HF, 9O,

MOLECULAR WEIGHT:

516.07

CONCENTRATION:

 $50 \pm 2.5 \, \mu g/m!$

SOLVENT(S):

Methanol Water (<1%)

CHEMICAL PURITY:

>98%

ISOTOPIC PURITY:

>99% 13C (1,2-13C_a)

LAST TESTED: (mm/dd/yyyy)

09/30/2016

EXPIRY DATE: (mm/did/yyyy)

09/30/2021

RECOMMENDED STORAGE:

Store ampoule in a cool, dark place

DOCUMENTATION/ DATA ATTACHED:

Figure 1: LC/MS Data (TIC and Mass Spectrum)

Figure 2: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

See page 2 for further details.

Contains 4 mole eq. of NaOH to prevent conversion of the carboxylic acid to the methyl ester.

Contains < 0.1% of ¹³C,-PFNA.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By:

Date: 10/07/2016

Wellington Laboratories Inc., 345 Southgate Dr. Guelph ON N1G 3M5 CANADA 519-822-2436 • Fax: 519-822-2849 • info@well-labs.com

The products prepared by Wellington Laboratories Inc. are for laboratory use only. This certified reference material (CRM) was designed to be used as a standard for the identification and/or quantification of the specific chemical compound it contains.

HAZARDS:

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SYNTHESIS / CHARACTERIZATION:

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HOMOGENEITY:

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EXPIRY DATE / PERIOD OF VALIDITY:

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LIMITED WARRANTY:

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QUALITY MANAGEMENT:

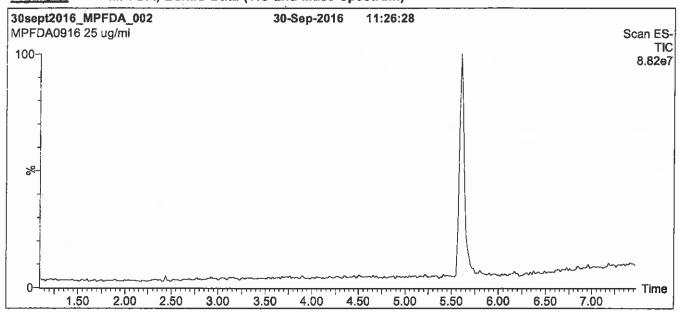
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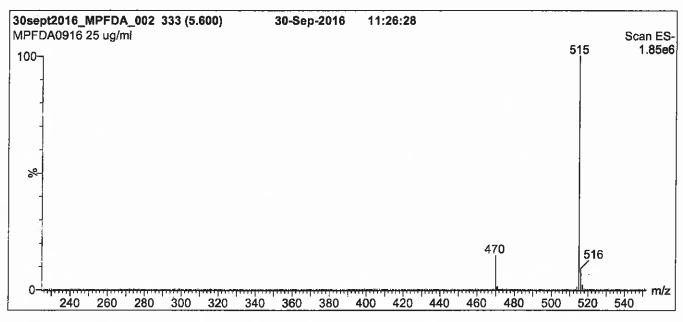




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Figure 1: MPFDA; LC/MS Data (TIC and Mass Spectrum)





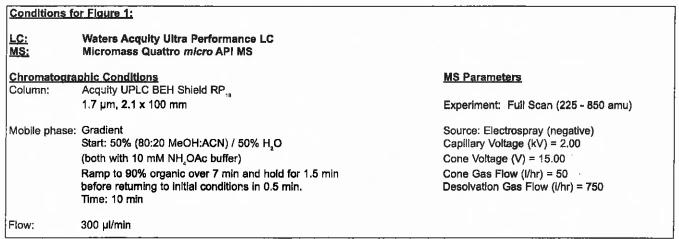
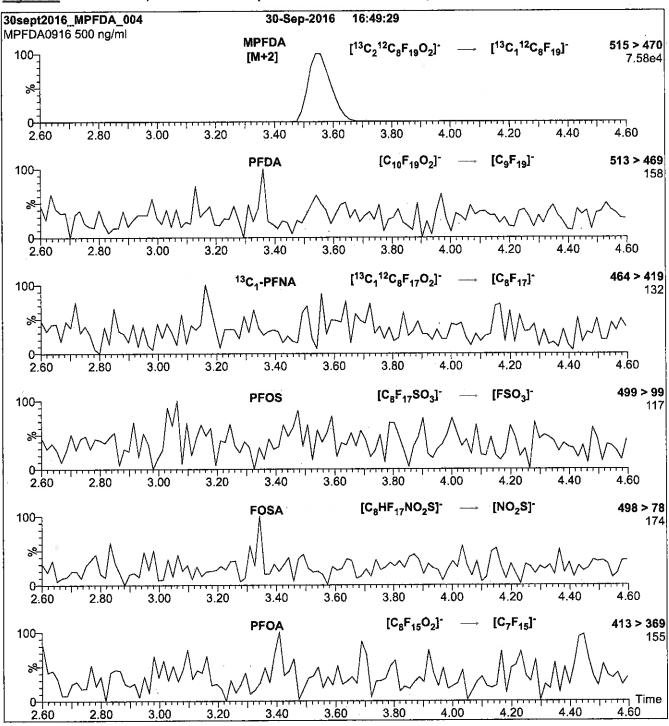
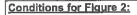


Figure 2: MPFDA; LC/MS/MS Data (Selected MRM Transitions)





Injection:

Direct loop injection

10 µl (500 ng/ml MPFDA)

Mobile phase: Isocratic 80% (80:20 MeOH:ACN) / 20% H₂O

(both with 10 mM NH,OAc buffer)

Flow:

300 µl/min

MS Parameters

Collision Gas (mbar) = 3.31e-3 Collision Energy (eV) = 13

LCMPFDoA_00009



PRODUCT CODE:

MPFDoA

LOT NUMBER:

MPFDoA0416

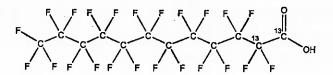
COMPOUND:

Perfluoro-n-[1,2-13C_]dodecanoic acid

STRUCTURE:

CAS #:

Not available



MOLECULAR FORMULA:

13C, 12C,0HF,3O,

MOLECULAR WEIGHT:

616.08

CONCENTRATION:

 $50 \pm 2.5 \, \mu g/ml$

SOLVENT(S):

Methanol

CHEMICAL PURITY:

>98%

ISOTOPIC PURITY:

Water (<1%)

LAST TESTED: (mm/dd/yyyy)

04/08/2016

≥99% ¹³C (1,2-13C₂)

EXPIRY DATE: (mm/dd/yyyy)

04/08/2021

RECOMMENDED STORAGE:

Store ampoule in a cool, dark place

DOCUMENTATION/ DATA ATTACHED:

Figure 1: LC/MS Data (TIC and Mass Spectrum)

Figure 2: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

See page 2 for further details.

Contains 4 mole eq. of NaOH to prevent conversion of the carboxylic acid to the methyl ester.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By:

Date: <u>04/15/2016</u>

Wellington Laboratories Inc., 345 Southgate Dr. Guelph ON N1G 3M5 CANADA 519-822-2436 • Fax: 519-822-2849 • info@well-labs.com

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$$u_c(y(x_1, x_2, ...x_n)) = \sqrt{\sum_{i=1}^n u(y, x_i)^2}$$

where x is expressed as a relative standard uncertainty of the individual parameter.

The individual uncertainties taken into account include those associated with weights (calibration of the balance) and volumes (calibration of the volumetric glassware). An expanded maximum combined percent relative uncertainty of ±5% (calculated with a coverage factor of 2 and a level of confidence of 95%) is stated on the Certificate of Analysis for all of our products.

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EXPIRY DATE / PERIOD OF VALIDITY:

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LIMITED WARRANTY:

At the time of shipment, all products are warranted to be free of defects in material and workmanship and to conform to the stated technical and purity specifications.

QUALITY MANAGEMENT:

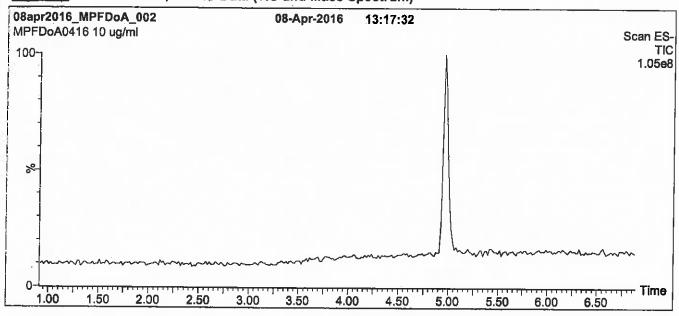
This product was produced using a Quality Management System registered to the latest versions of ISO 9001 by SAI Global, ISO/IEC 17025 by the Canadian Association for Laboratory Accreditation Inc. (CALA; A 1226), and ISO GUIDE 34 by ANSI-ASQ National Accreditation Board (ANAB; AR-1523).

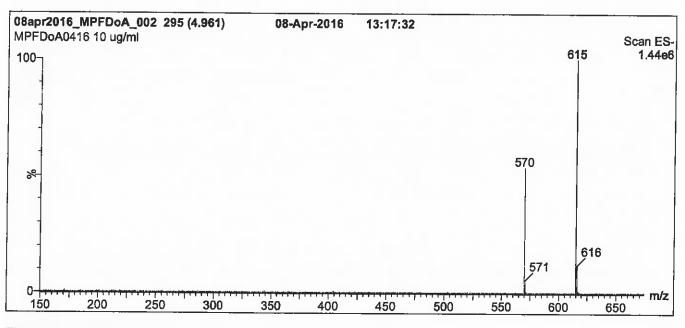




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Figure 1: MPFDoA; LC/MS Data (TIC and Mass Spectrum)





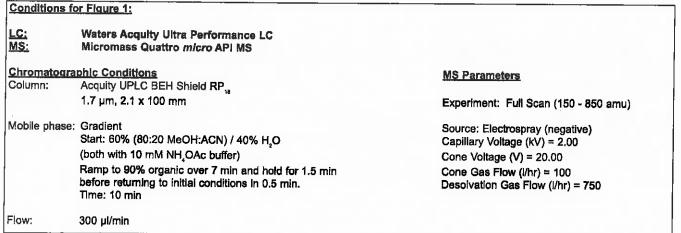
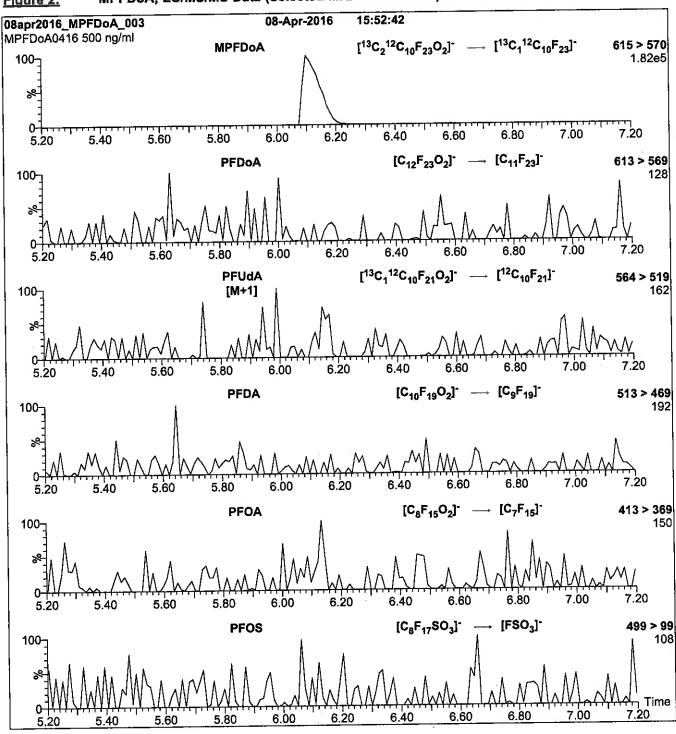
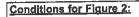


Figure 2: MPFDoA; LC/MS/MS Data (Selected MRM Transitions)





Injection:

Direct loop Injection

10 μl (500 ng/ml MPFDoA)

Mobile phase: Isocratic 80% (80:20 MeOH:ACN) / 20% H₂O

(both with 10 mM NH,OAc buffer)

Flow:

300 µl/min

MS Parameters

Collision Gas (mbar) = 3.24e-3 Collision Energy (eV) = 13

LCMPFDoA_00010



PRODUCT CODE:

MPFDoA

LOT NUMBER:

MPFDoA0416

COMPOUND:

Perfluoro-n-[1,2-13C] dodecanoic acid

STRUCTURE:

CAS #:

Not available

MOLECULAR FORMULA:

 $^{13}C_{2}^{12}C_{10}HF_{23}O_{2}$

MOLECULAR WEIGHT:

616.08

CONCENTRATION:

50 ± 2.5 µg/ml

SOLVENT(S):

Methanol Water (<1%)

CHEMICAL PURITY:

>98%

ISOTOPIC PURITY:

≥99% ¹³C (1,2-¹³C₃)

LAST TESTED: (mm/od/yyyy)

04/08/2016

EXPIRY DATE: (mm/dd/yyyy)

04/08/2021

RECOMMENDED STORAGE:

Store ampoule in a cool, dark place

DOCUMENTATION/ DATA ATTACHED:

Figure 1: LC/MS Data (TIC and Mass Spectrum)

Figure 2: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

See page 2 for further details.

Contains 4 mole eq. of NaOH to prevent conversion of the carboxylic acid to the methyl ester.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By:

B.G. Chittim

Date: _

<u>04/15/2016</u>

Wellington Laboratories Inc., 345 Southgate Dr. Guelph ON N1G 3M5 CANADA 519-822-2436 • Fax: 519-822-2849 • info@well-labs.com

The products prepared by Wellington Laboratories Inc. are for laboratory use only. This certified reference material (CRM) was designed to be used as a standard for the identification and/or quantification of the specific chemical compound it contains.

HAZARDS:

This product should only be used by qualified personnel familiar with its potential hazards and trained in the handling of hazardous chemicals. Due care should be exercised to prevent unnecessary human contact or ingestion. All procedures should be carried out in a well-functioning fume hood and suitable gloves, eye protection, and clothing should be worn at all times. Waste should be disposed of according to national and regional regulations. Safety Data Sheets (SDSs) are available upon request.

SYNTHESIS / CHARACTERIZATION:

Where possible, all of our products are synthesized using single-product unambiguous routes. They are then characterized, and their structures and purities confirmed, using a combination of the most relevant techniques, such as NMR, GC/MS, LC/MS/MS, SFC/UV/MS/MS, x-ray crystallography, and melting point. Isotopic purities of mass-labelled compounds are also confirmed using HRGC/HRMS and/or LC/MS/MS.

HOMOGENEITY:

Prior to solution preparation, crystalline material is tested for homogeneity using a variety of techniques (as stated above) and its solubility in a given diluent is taken into consideration. Duplicate solutions of a new product are prepared from the same crystalline lot and, after the addition of an appropriate internal standard, they are compared by GC/MS, LC/MS/MS and/or SFC/UV/MS/MS. The relative response factors of the analyte of interest in each solution are required to be <5% RSD. New solution lots of existing products are compared to older lots in the same manner, which further confirms the homogeneity of the crystalline material as well as the stability and homogeneity of the solutions in the storage containers.

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EXPIRY DATE / PERIOD OF VALIDITY:

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LIMITED WARRANTY:

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QUALITY MANAGEMENT:

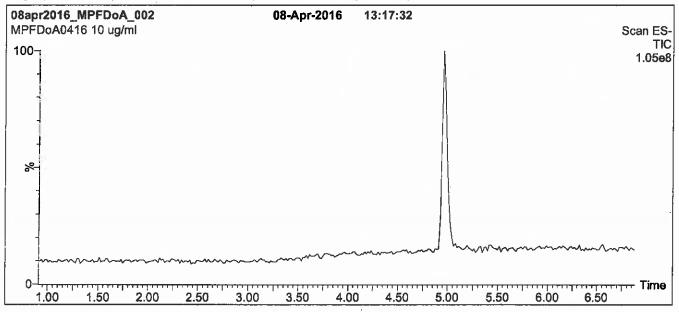
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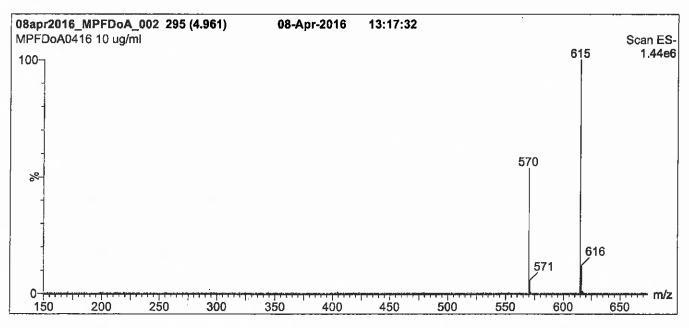




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Figure 1: MPFDoA; LC/MS Data (TIC and Mass Spectrum)





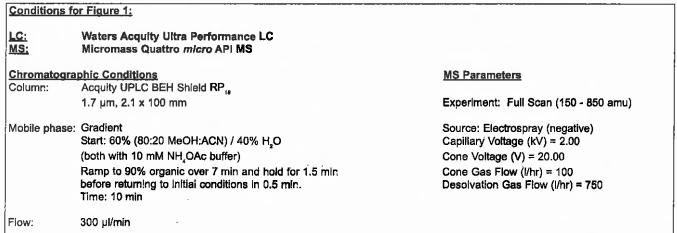
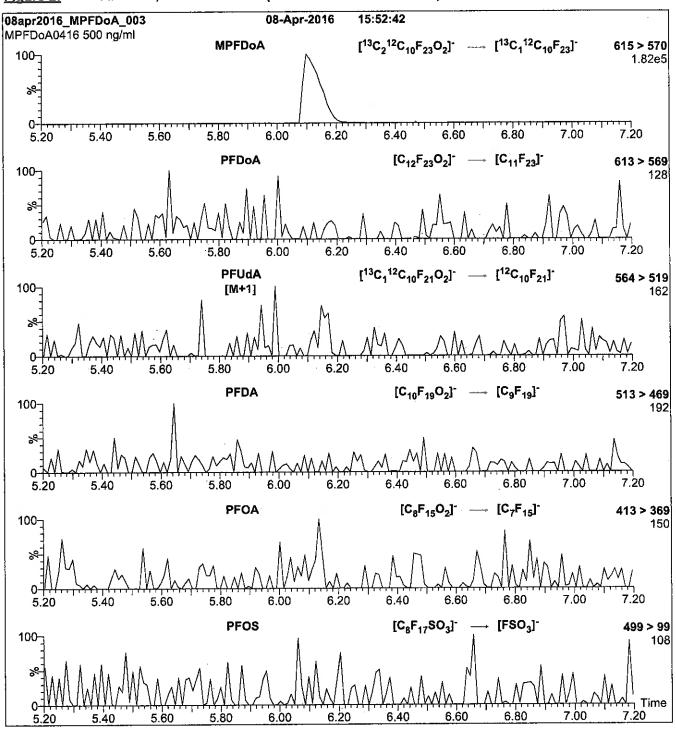
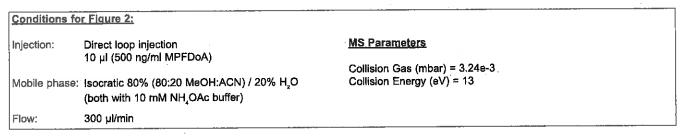


Figure 2: MPFDoA; LC/MS/MS Data (Selected MRM Transitions)





LCMPFHxA_00014



PRODUCT CODE:

MPFHxA

LOT NUMBER:

MPFHxA1116

COMPOUND:

Perfluoro-n-[1,2-13C]hexanoic acid

STRUCTURE:

CAS #:

Not available

MOLECULAR FORMULA:

13C, 12C, HF, O,

MOLECULAR WEIGHT:

316.04

CONCENTRATION:

50 ± 2.5 µg/ml

SOLVENT(S):

Methanol

CHEMICAL PURITY:

>98%

ISOTOPIC PURITY:

Water (<1%) >99%13C (1,2-13C_a)

LAST TESTED: (mm/skd/yyyy)

11/22/2016

EXPIRY DATE: (mm/dd/yww)

11/22/2021

RECOMMENDED STORAGE:

Store ampoule in a cool, dark place

DOCUMENTATION/ DATA ATTACHED:

Figure 1: LC/MS Data (TIC and Mass Spectrum)

Figure 2: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

See page 2 for further details.

Contains 4 mole eq. of NaOH to prevent conversion of the carboxylic acid to the methyl ester.

Contains < 0.1% of perfluoro-n-hexanoic acid and ~ 0.3% of perfluoro-n-octanoic acid.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By:

Date: 12/13/2016

Wellington Laboratories Inc., 345 Southgate Dr. Guelph ON N1G 3M5 CANADA 519-822-2436 • Fax: 519-822-2849 • Info@well-labs.com

The products prepared by Wellington Laboratories Inc. are for laboratory use only. This certified reference material (CRM) was designed to be used as a standard for the identification and/or quantification of the specific chemical compound it contains.

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EXPIRY DATE / PERIOD OF VALIDITY:

Ongoing stability studies of this product have demonstrated stability in its composition and concentration, until the specified expiry date, in the unopened ampoule. Monitoring for any degradation or change in concentration of the listed analyte(s) is performed on a routine basis.

LIMITED WARRANTY:

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QUALITY MANAGEMENT:

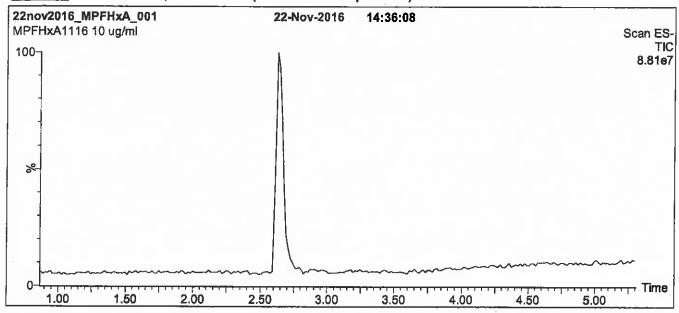
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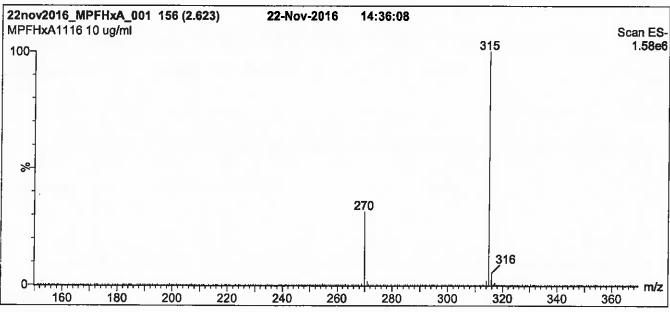




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Figure 1: MPFHxA; LC/MS Data (TIC and Mass Spectrum)





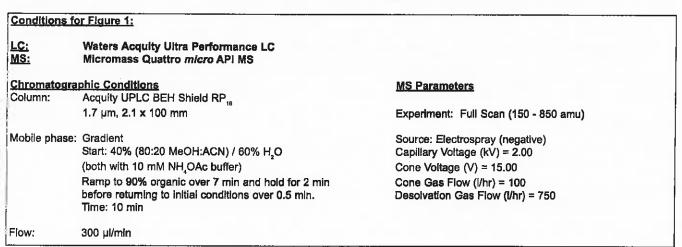
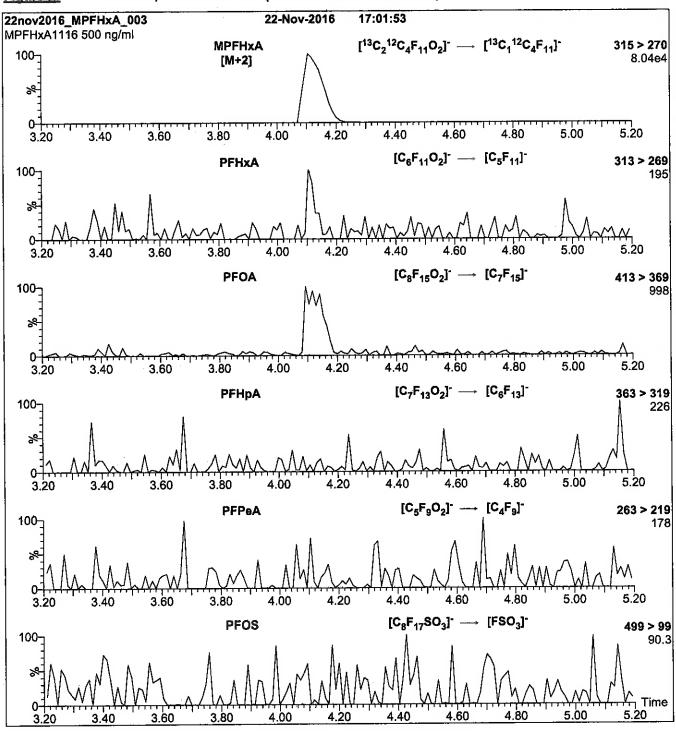
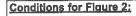


Figure 2: MPFHxA; LC/MS/MS Data (Selected MRM Transitions)





Injection:

Direct loop injection

10 μl (500 ng/ml MPFHxA)

Mobile phase: Isocratic 80% (80:20 MeOH:ACN) / 20% H,O

(both with 10 mM NH,OAc buffer)

Flow:

300 µl/min

MS Parameters

Collision Gas (mbar) = 3.46e-3 Collision Energy (eV) = 10

LCMPFHxA_00016



PRODUCT CODE:

MPFHxA

LOT NUMBER:

MPFHxA1116

COMPOUND:

Perfluoro-n-[1,2-13C] hexanoic acid

STRUCTURE:

CAS #:

Not available

MOLECULAR FORMULA:

 $^{13}C_{_{2}}^{^{12}}C_{_{4}}HF_{_{11}}O_{_{2}}$

MOLECULAR WEIGHT:

316.04

CONCENTRATION:

50 ± 2.5 µg/ml

SOLVENT(S):

Methanol Water (<1%)

CHEMICAL PURITY:

>98%

ISOTOPIC PURITY:

≥99%¹³C (1,2-¹³C。)

LAST TESTED: (mm/dd/yyyy)
EXPIRY DATE: (mm/dd/yyyy)

11/22/2016

11/22/

The contraction of the contracti

11/22/2021

RECOMMENDED STORAGE:

DOCUMENTATION/ DATA ATTACHED:

Store ampoule in a cool, dark place

Figure 1: LC/MS Data (TIC and Mass Spectrum)

Figure 2: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

See page 2 for further details.

Contains 4 mole eq. of NaOH to prevent conversion of the carboxylic acid to the methyl ester.

Contains < 0.1% of perfluoro-n-hexanoic acid and ~ 0.3% of perfluoro-n-octanoic acid.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By:

B.G. Chittim

Date: 12/13/2016

(mm/dd/yyyy

Wellington Laboratories Inc., 345 Southgate Dr. Guelph ON N1G 3M5 CANADA 519-822-2436 • Fax: 519-822-2849 • Info@well-labs.com

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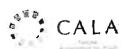
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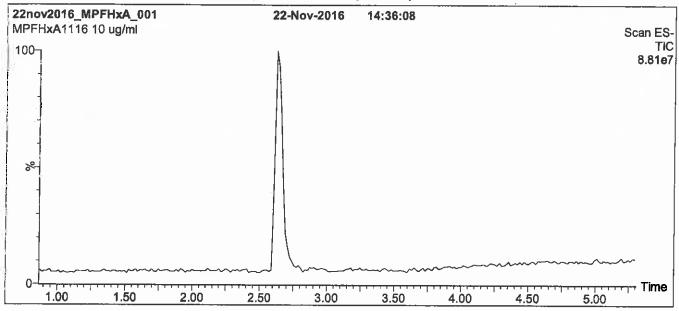
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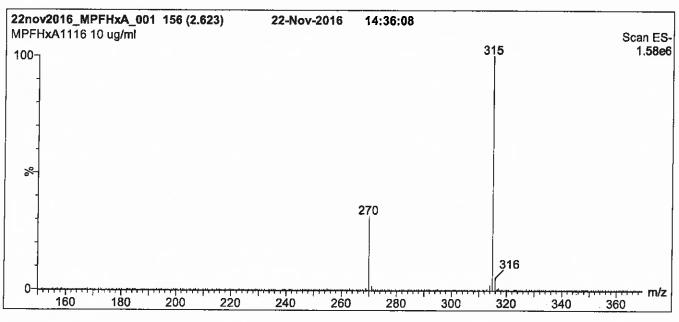




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Figure 1: MPFHxA; LC/MS Data (TIC and Mass Spectrum)





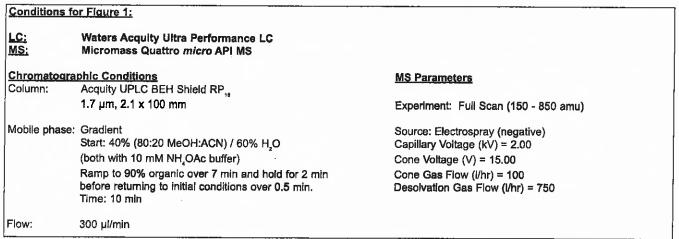
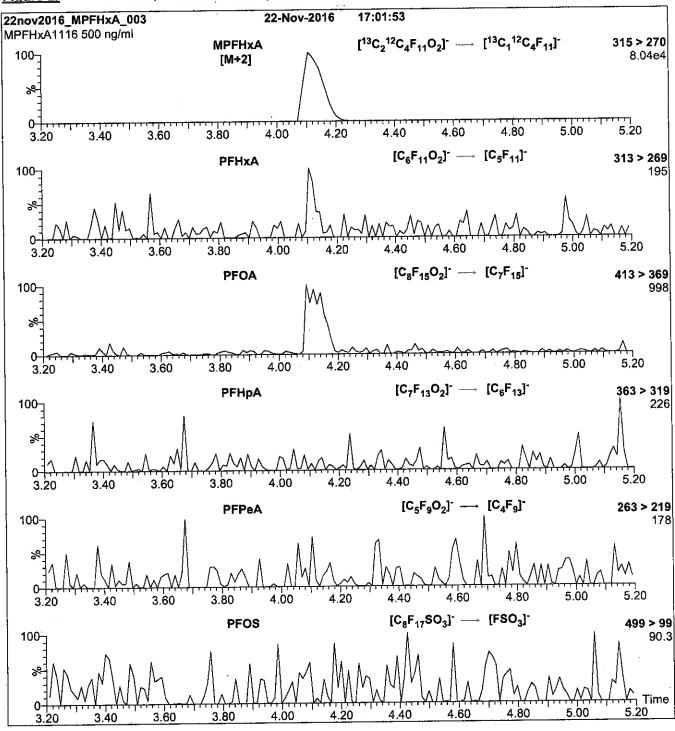
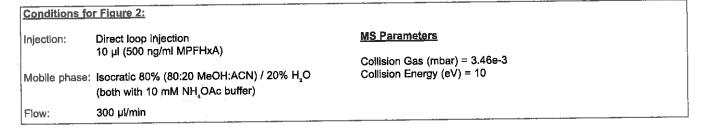


Figure 2: MPFHxA; LC/MS/MS Data (Selected MRM Transitions)





LCMPFHxS_00009



PRODUCT CODE:

MPFHxS

LOT NUMBER:

MPFHxS1015

COMPOUND:

Sodium perfluoro-1-hexane[18O2]sulfonate

STRUCTURE:

CAS #:

Not available

F F F F F F F

MOLECULAR FORMULA:

C₆F₁₃S¹⁸O₂¹⁶ONa

MOLECULAR WEIGHT:

426.10

CONCENTRATION:

 $50.0 \pm 2.5 \,\mu g/ml$ (Na salt)

SOLVENT(S):

Methanol

CHEMICAL PURITY:

>98%

ISOTOPIC PURITY:

>94% (18O,)

LAST TESTED: (mm/dd/yyyy)

10/23/2015

EXPIRY DATE: (mm/dd/yyyy)

10/23/2010

RECOMMENDED STORAGE:

Store ampoule in a cool, dark place

47.3 ± 2.4 µg/ml (MPFHxS anion)

DOCUMENTATION/ DATA ATTACHED:

Figure 1: LC/MS Data (TIC and Mass Spectrum)

Figure 2: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

See page 2 for further details.

The response factor for MPFHxS (C₆F₁₃S¹⁸O₂¹⁶O) has been observed to be up to 10% lower than for PFHxS (C₅F₁₃S¹⁸O₃) when both compounds are injected together. This difference may vary between instruments.

Due to the isotopic purity of the starting material (18O₂ >94%), MPFHxS contains ~ 0.3% of PFHxS. This value agrees with the theoretical percent relative abundance that is expected based on the stated isotopic purity.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By:

B.G. Chiltim

Date: 10/28/2015

Wellington Laboratories Inc., 345 Southgate Dr. Guelph ON N1G 3M5 CANADA 519-822-2436 • Fax: 519-822-2849 • info@well-labs.com

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HAZARDS:

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The individual uncertainties taken into account include those associated with weights (calibration of the balance) and volumes (calibration of the volumetric glassware). An expanded maximum combined percent relative uncertainty of ±5% (calculated with a coverage factor of 2 and a level of confidence of 95%) is stated on the Certificate of Analysis for all of our products.

TRACEABILITY:

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EXPIRY DATE / PERIOD OF VALIDITY:

Ongoing stability studies of this product have demonstrated stability in its composition and concentration, until the specified expiry date, in the unopened ampoule. Monitoring for any degradation or change in concentration of the listed analyte(s) is performed on a routine basis.

LIMITED WARRANTY:

At the time of shipment, all products are warranted to be free of defects in material and workmanship and to conform to the stated technical and purity specifications.

QUALITY MANAGEMENT:

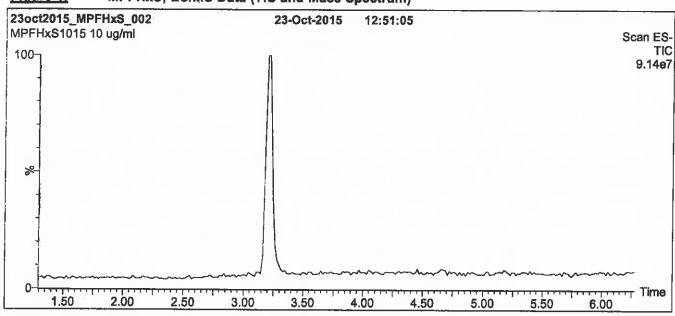
This product was produced using a Quality Management System registered to the latest versions of ISO 9001 by SAI Global, ISO/IEC 17025 by the Canadian Association for Laboratory Accreditation Inc. (CALA; A 1226), and ISO GUIDE 34 by ANSI-ASQ National Accreditation Board (ANAB; AR-1523).

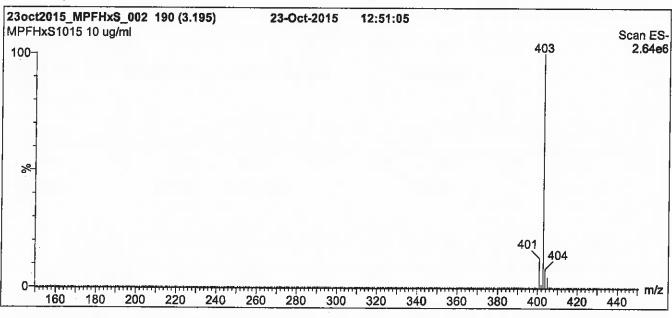




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Figure 1: MPFHxS; LC/MS Data (TIC and Mass Spectrum)





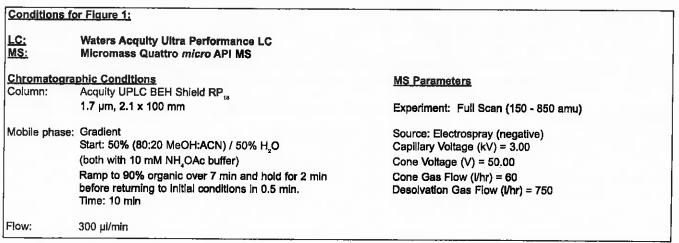
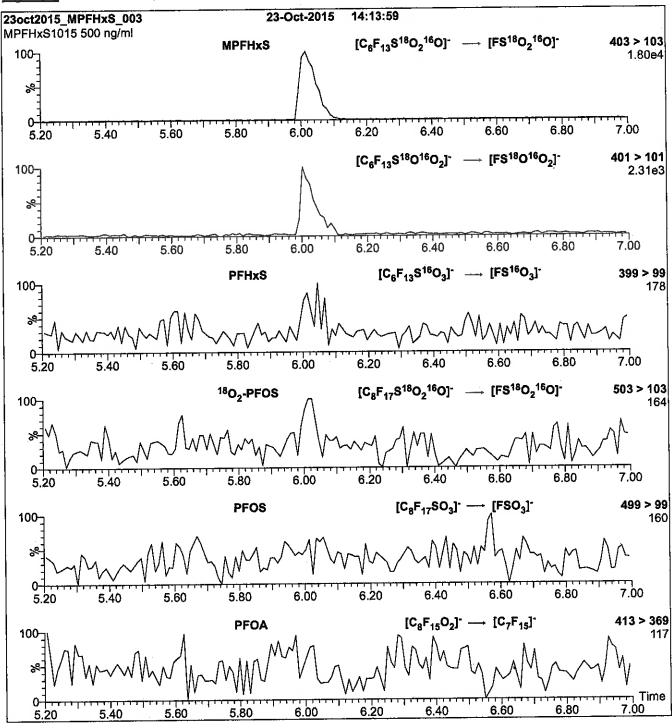
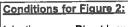


Figure 2: MPFHxS; LC/MS/MS Data (Selected MRM Transitions)





Injection:

Direct loop injection

10 μl (500 ng/ml MPFHxS)

Mobile phase: Isocratic 80% (80:20 MeOH:ACN) / 20% H₂O

(both with 10 mM NH,OAc buffer)

Flow:

300 µl/min

MS Parameters

Collision Gas (mbar) = 3.35e-3 Collision Energy (eV) = 30

LCMPFHxS_00010



PRODUCT CODE:

MPFHxS

LOT NUMBER:

MPFHxS0217

COMPOUND:

Sodium perfluoro-1-hexane[18O,]sulfonate

STRUCTURE:

CAS #:

Not available

F F F F F F F F F

MOLECULAR FORMULA:

C₈F₁₃S¹⁸O₂¹⁶ONa

MOLECULAR WEIGHT:

426.10

CONCENTRATION:

 $50.0 \pm 2.5 \,\mu\text{g/ml}$ (Na salt)

SOLVENT(S):

Methanol

CHEMICAL PURITY:

>98%

ISOTOPIC PURITY:

>94% (16O₂)

LAST TESTED: (mm/dd/yyyy)

02/17/2017

EXPIRY DATE; (mm/dd/yyyy)

02/17/2022

RECOMMENDED STORAGE:

Store ampoule in a cool, dark place

 $47.3 \pm 2.4 \mu g/ml$ (MPFHxS anion)

DOCUMENTATION/ DATA ATTACHED:

Figure 1: LC/MS Data (TIC and Mass Spectrum)

Figure 2: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

See page 2 for further details.

• The response factor for MPFHxS (C₆F₁₃S¹⁸O₂¹⁶O) has been observed to be up to 10% lower than for PFHxS (C₆F₁₃S¹⁶O₃) when both compounds are injected together. This difference may vary between instruments.

Contains ~ 1.0% of sodium perfluoro-1-octane[180₂]sulfonate (180₂-PFOS).

Due to the isotopic purity of the starting material (¹⁸O₂ >94%), MPFHxS contains ~ 0.3% of PFHxS. This value agrees with the theoretical percent relative abundance that is expected based on the stated isotopic purity.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By:

P.C. Christian

Date:

03/02/2017

Wellington Laboratories Inc., 345 Southgate Dr. Guelph ON N1G 3M5 CANADA 519-822-2436 • Fax: 519-822-2849 • info@well-labs.com

The products prepared by Wellington Laboratories Inc. are for laboratory use only. This certified reference material (CRM) was designed to be used as a standard for the identification and/or quantification of the specific chemical compound it contains.

HAZARDS:

This product should only be used by qualified personnel familiar with its potential hazards and trained in the handling of hazardous chemicals. Due care should be exercised to prevent unnecessary human contact or ingestion. All procedures should be carried out in a well-functioning tume hood and suitable gloves, eye protection, and clothing should be worn at all times. Waste should be disposed of according to national and regional regulations. Safety Data Sheets (SDSs) are available upon request.

SYNTHESIS / CHARACTERIZATION:

Where possible, all of our products are synthesized using single-product unambiguous routes. They are then characterized, and their structures and purities confirmed, using a combination of the most relevant techniques, such as NMR, GC/MS, LC/MS/MS, SFC/UV/MS/MS, x-ray crystallography, and melting point. Isotopic purities of mass-labelled compounds are also confirmed using HRGC/HRMS and/or LC/MS/MS.

HOMOGENEITY:

Prior to solution preparation, crystalline material is tested for homogeneity using a variety of techniques (as stated above) and its solubility in a given diluent is taken into consideration. Duplicate solutions of a new product are prepared from the same crystalline lot and, after the addition of an appropriate internal standard, they are compared by GC/MS, LC/MS/MS and/or SFC/UV/MS/MS. The relative response factors of the analyte of interest in each solution are required to be <5% RSD. New solution lots of existing products are compared to older lots in the same manner, which further confirms the homogeneity of the crystalline material as well as the stability and homogeneity of the solutions in the storage containers.

UNCERTAINTY:

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$$x_i, x_2,...x_n$$
 on which it depends is:
$$u_c(y(x_1,x_2,...x_n)) = \sqrt{\sum_{i=1}^n u(y,x_i)^2}$$

where x is expressed as a relative standard uncertainty of the individual parameter.

The individual uncertainties taken into account include those associated with weights (calibration of the balance) and volumes (calibration of the volumetric glassware). An expanded maximum combined percent relative uncertainty of $\pm 5\%$ (calculated with a coverage factor of 2 and a level of confidence of 95%) is stated on the Certificate of Analysis for all of our products.

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LIMITED WARRANTY:

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QUALITY MANAGEMENT:

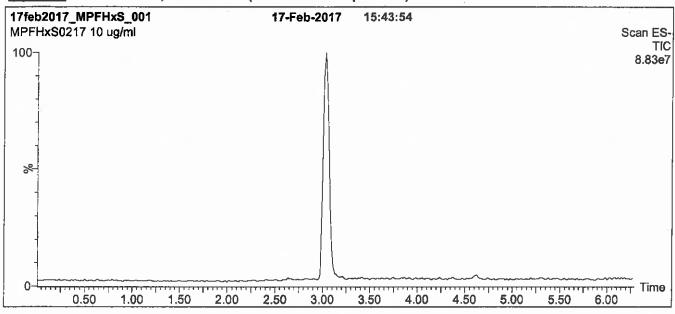
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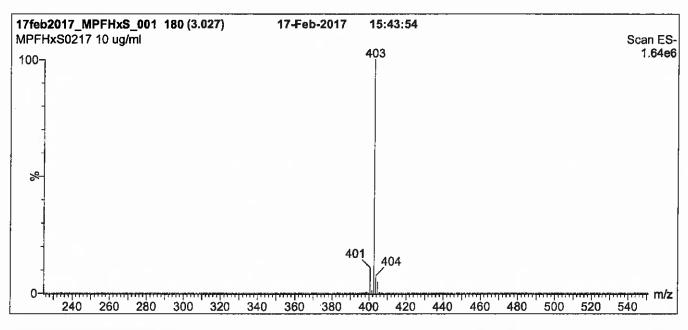




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Figure 1: MPFHxS; LC/MS Data (TIC and Mass Spectrum)





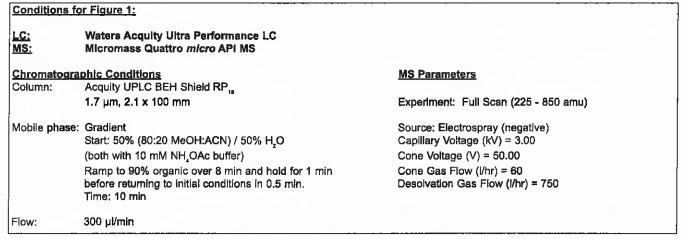
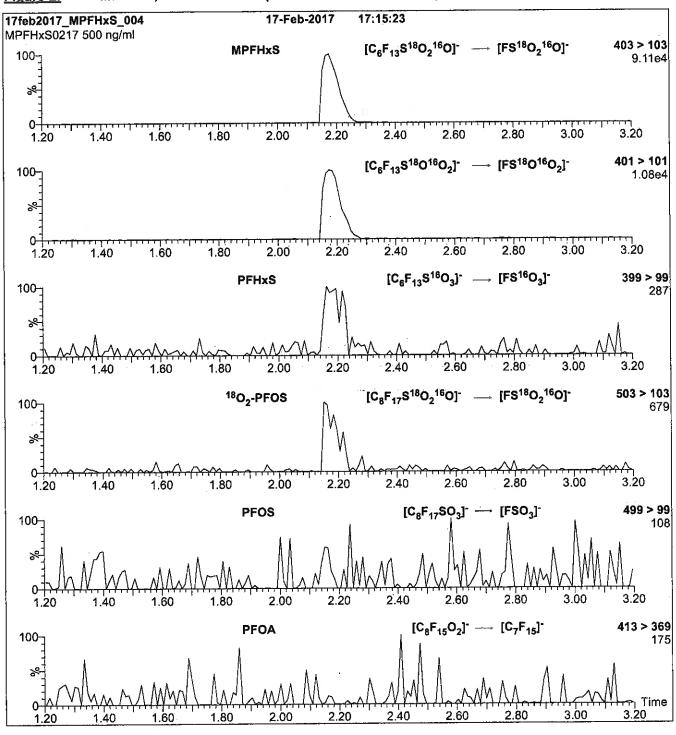


Figure 2: MPFHxS; LC/MS/MS Data (Selected MRM Transitions)





Injection:

Direct loop injection

10 µl (500 ng/ml MPFHxS)

Mobile phase: Isocratic 80% (80:20 MeOH:ACN) / 20% H,O

(both with 10 mM NH OAc buffer)

Flow:

300 µl/min

MS Parameters

Collision Gas (mbar) = 3.43e-3 Collision Energy (eV) = 30

LCMPFNA 00009



PRODUCT CODE:

MPFNA

LOT NUMBER:

MPFNA0916

COMPOUND:

Perfluoro-n-[1,2,3,4,5-13C,]nonanoic acid

CAS #:

Not available

STRUCTURE:

MOLECULAR FORMULA:

CONCENTRATION:

¹³C₅ ¹²C₄HF₁₇O₉

 $50 \pm 2.5 \,\mu g/m!$

MOLECULAR WEIGHT:

469.04

SOLVENT(S):

Methanol Water (<1%)

CHEMICAL PURITY:

>98%

LAST TESTED: (mm/dd/yww)

09/30/2016

EXPIRY DATE: (mm/dd/yyyy)

09/30/2021

RECOMMENDED STORAGE:

Store ampoule in a cool, dark place

ISOTOPIC PURITY:

≥99%13C

(1,2,3,4,5-13C₅)

DOCUMENTATION/ DATA ATTACHED:

Figure 1: LC/MS Data (TIC and Mass Spectrum)

Figure 2: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

See page 2 for further details.

Contains 4 mole eq. of NaOH to prevent conversion of the carboxylic acid to the methyl ester.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By:

Date: 10/11/2016

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UNCERTAINTY:

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 $x_a, x_b,...x_a$ on which it depends is:

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LIMITED WARRANTY:

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QUALITY MANAGEMENT:

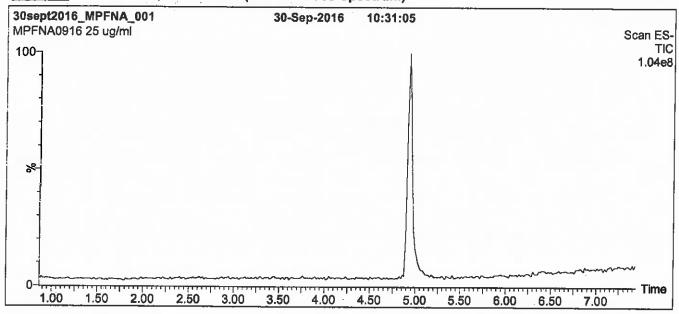
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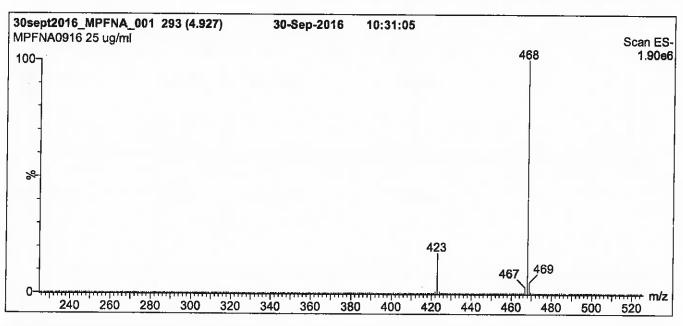




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Figure 1: MPFNA; LC/MS Data (TIC and Mass Spectrum)





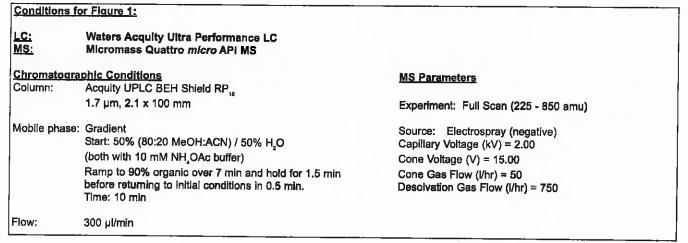
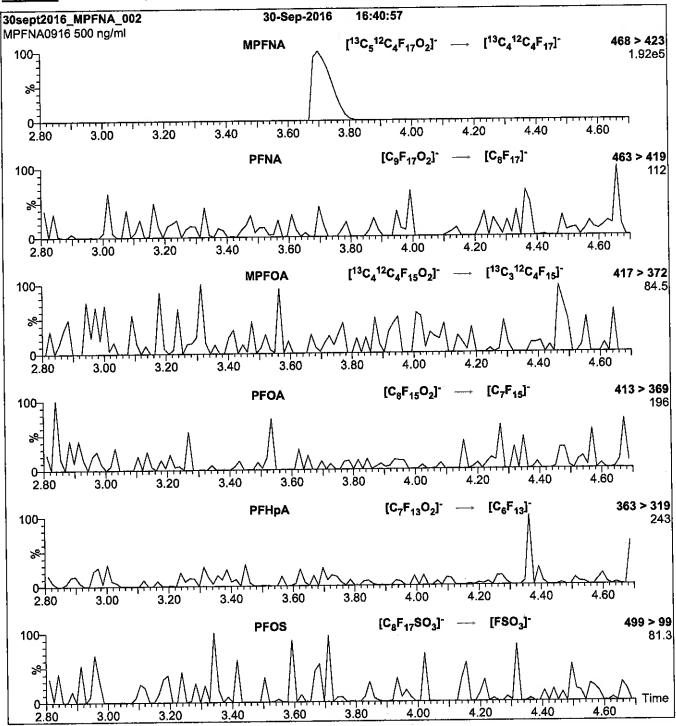
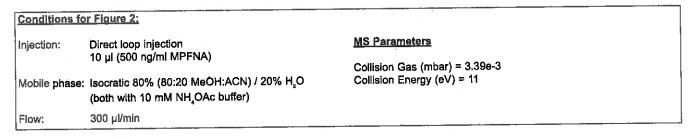


Figure 2: MPFNA; LC/MS/MS Data (Selected MRM Transitions)





LCMPFNA 00010



PRODUCT CODE:

MPFNA

LOT NUMBER:

MPFNA0916

COMPOUND:

Perfluoro-n-[1,2,3,4,5-13C_s]nonanoic acid

CAS #:

Not available

STRUCTURE:

F F F F F F F F

MOLECULAR FORMULA:

¹³C₅¹²C₄HF₁₇O₂

MOLECULAR WEIGHT:

469.04

CONCENTRATION:

50 ± 2.5 µg/ml

SOLVENT(S):

Methanol

CHEMICAL PURITY:

>98%

Water (<1%)

LAST TESTED: (mm/dd/yyyy)

09/30/2016

ISOTOPIC PURITY:

≥99%¹³C (1,2,3,4,5-¹³C_e)

EXPIRY DATE: (mm/dd/yyyy)

00/00/0004

09/30/2021

RECOMMENDED STORAGE:

Store ampoule in a cool, dark place

DOCUMENTATION/ DATA ATTACHED:

Figure 1: LC/MS Data (TIC and Mass Spectrum)

Figure 2: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

See page 2 for further details.

Contains 4 mole eq. of NaOH to prevent conversion of the carboxylic acid to the methyl ester.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By:

B.G. Chittim

Date:

: <u>10/11/2016</u>

Wellington Laboratories Inc., 345 Southgate Dr. Guelph ON N1G 3M5 CANADA 519-822-2436 • Fax: 519-822-2849 • info@well-labs.com

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LIMITED WARRANTY:

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QUALITY MANAGEMENT:

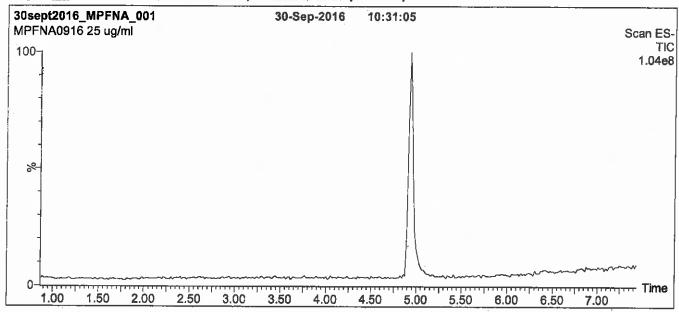
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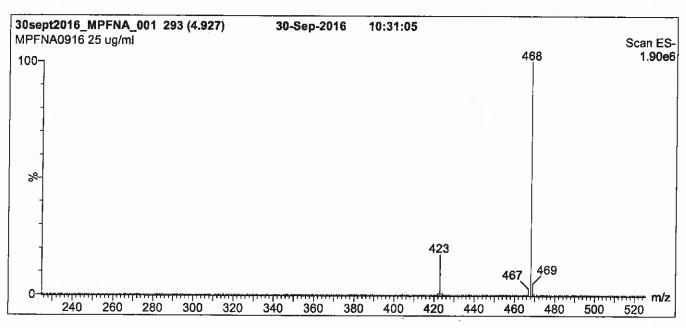




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Figure 1: MPFNA; LC/MS Data (TIC and Mass Spectrum)





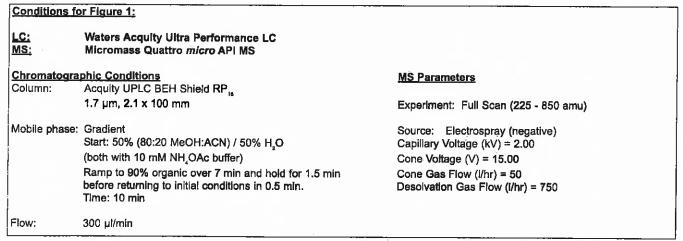
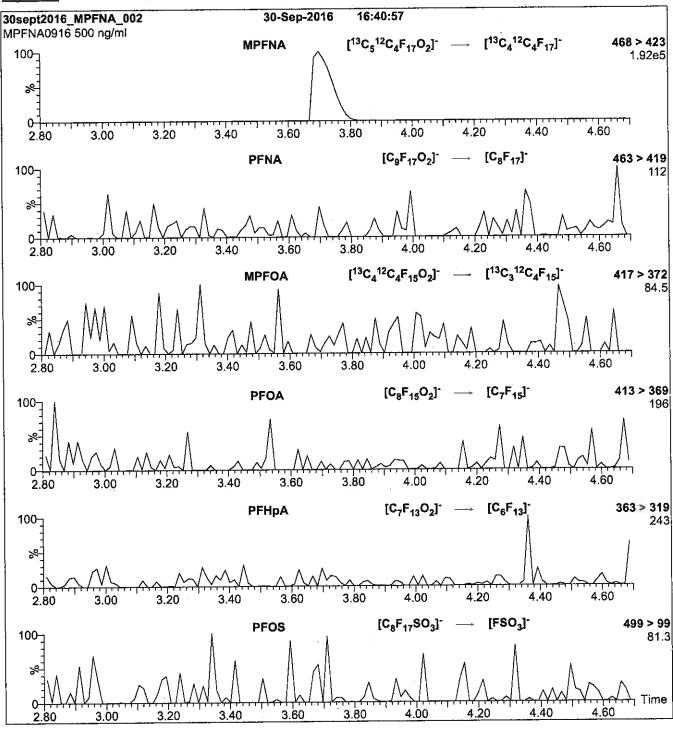
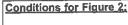


Figure 2: MPFNA; LC/MS/MS Data (Selected MRM Transitions)





Injection:

Direct loop injection

10 µl (500 ng/ml MPFNA)

Mobile phase: Isocratic 80% (80:20 MeOH:ACN) / 20% H,O

(both with 10 mM NH₂OAc buffer)

Flow:

300 µl/min

MS Parameters

Collision Gas (mbar) = 3.39e-3 Collision Energy (eV) = 11

LCMPFOA_00013



PRODUCT CODE:

MPFOA

LOT NUMBER:

MPFOA1016

COMPOUND:

Perfluoro-n-[1,2,3,4-13C] octanoic acid

STRUCTURE:

CAS #:

Not available

MOLECULAR FORMULA:

13C, 12C, HF, O,

MOLECULAR WEIGHT:

418.04

CONCENTRATION:

 $50 \pm 2.5 \,\mu g/ml$

SOLVENT(S):

Methanoi

CHEMICAL PURITY:

>98%

ISOTOPIC PURITY:

Water (<1%) >99% 13C

(1,2,3,4-13C,)

LAST TESTED: (mm/dd/yyyr)

10/18/2016

EXPIRY DATE: (mm/dd/yyyy)

10/18/2021

RECOMMENDED STORAGE:

Store ampoule in a cool, dark place

DOCUMENTATION/ DATA ATTACHED:

Figure 1: LC/MS Data (TIC and Mass Spectrum)

Figure 2: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

See page 2 for further details.

Contains 4 mole eq. of NaOH to prevent conversion of the carboxylic acid to the methyl ester.

Contains ~ 0.1% of native perfluoro-n-octanoic acid (PFOA).

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By:

Date: 10/19/2016

Wellington Laboratories Inc., 345 Southgate Dr. Guelph ON N1G 3M5 CANADA 519-822-2436 • Fax: 519-822-2849 • info@well-labs.com

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EXPIRY DATE / PERIOD OF VALIDITY:

Ongoing stability studies of this product have demonstrated stability in its composition and concentration, until the specified expiry date, in the unopened ampoule. Monitoring for any degradation or change in concentration of the listed analyte(s) is performed on a routine basis.

LIMITED WARRANTY:

At the time of shipment, all products are warranted to be free of defects in material and workmanship and to conform to the stated technical and purity specifications.

QUALITY MANAGEMENT:

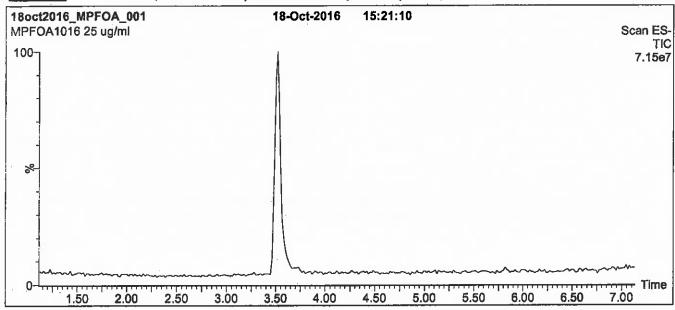
This product was produced using a Quality Management System registered to the latest versions of ISO 9001 by SAI Global, ISO/IEC 17025 by the Canadian Association for Laboratory Accreditation Inc. (CALA; A 1226), and ISO GUIDE 34 by ANSI-ASQ National Accreditation Board (ANAB; AR-1523).

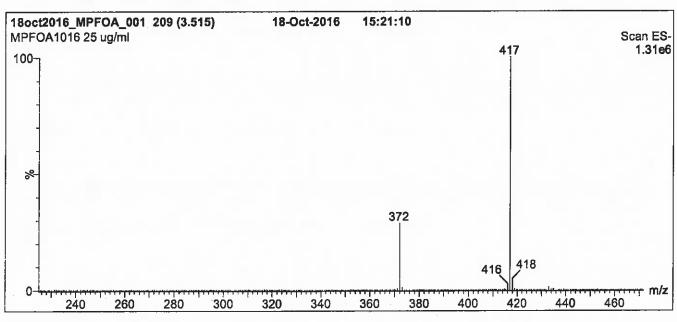




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Figure 1: MPFOA; LC/MS Data (TIC and Mass Spectrum)





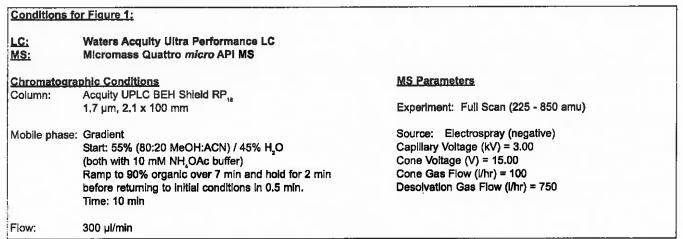
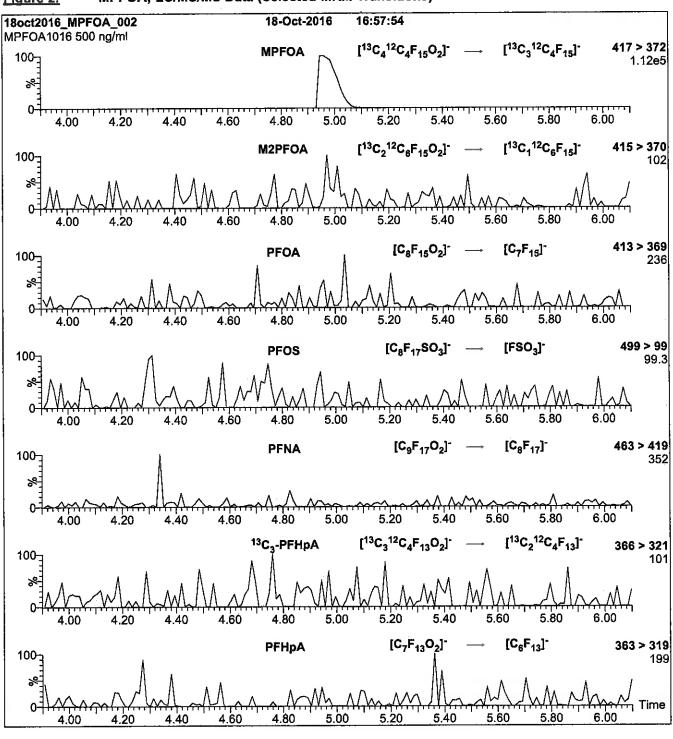
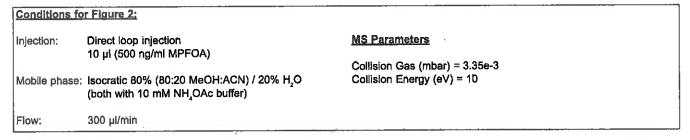


Figure 2: MPFOA; LC/MS/MS Data (Selected MRM Transitions)





LCMPFOA_00014



PRODUCT CODE:

MPFOA

LOT NUMBER:

MPFOA0417

COMPOUND:

Perfluoro-n-[1,2,3,4-13C] octanoic acid

STRUCTURE:

CAS #:

Not available

F F F F F F F F

MOLECULAR FORMULA:

¹³C₄¹²C₄HF₁₅O₂

MOLECULAR WEIGHT:

418.04

CONCENTRATION:

50 ± 2.5 μg/ml

SOLVENT(S):

Methanol

CHEMICAL PURITY:

>98%

ISOTOPIC PURITY:

Water (<1%) >99% ¹³C

 $(1,2,3,4^{-13}C_{\lambda})$

LAST TESTED: (mm/dd/yyyy)

04/12/2017

(0.000-0.000)

01/10/0017

EXPIRY DATE: (mm/dd/yyyy)

04/12/2022

RECOMMENDED STORAGE:

Store ampoule in a cool, dark place

DOCUMENTATION/ DATA ATTACHED:

Figure 1: LC/MS Data (TIC and Mass Spectrum)

Figure 2: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

See page 2 for further details.

Contains 4 mole eq. of NaOH to prevent conversion of the carboxylic acid to the methyl ester.

Contains ~ 0.1% of native perfluoro-n-octanoic acid (PFOA).

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By:

B.G. Chittim, General Manager

Date:

J4/28/2017

(mm/dd/yy

The products prepared by Wellington Laboratories Inc. are for laboratory use only. This certified reference material (CRM) was designed to be used as a standard for the Identification and/or quantification of the specific chemical compound it contains.

HAZARDS:

This product should only be used by qualified personnel familiar with its potential hazards and trained in the handling of hazardous chemicals. Due care should be exercised to prevent unnecessary human contact or ingestion. All procedures should be carried out in a well-functioning fume hood and suitable gloves, eye protection, and clothing should be worn at all times. Waste should be disposed of according to national and regional regulations. Safety Data Sheets (SDSs) are available upon request.

SYNTHESIS / CHARACTERIZATION:

Where possible, all of our products are synthesized using single-product unambiguous routes. They are then characterized, and their structures and purities confirmed, using a combination of the most relevant techniques, such as NMR, GC/MS, LC/MS/MS, SFC/UV/MS/MS, x-ray crystallography, and melting point. Isotopic purities of mass-labelled compounds are also confirmed using HRGC/HRMS and/or LC/MS/MS.

HOMOGENEITY:

Prior to solution preparation, crystalline material is tested for homogeneity using a variety of techniques (as stated above) and its solubility in a given diluent is taken into consideration. Duplicate solutions of a new product are prepared from the same crystalline lot and, after the addition of an appropriate internal standard, they are compared by GC/MS, LC/MS/MS and/or SFC/UV/MS/MS. The relative response factors of the analyte of interest in each solution are required to be <5% RSD. New solution lots of existing products are compared to older lots in the same manner, which further confirms the homogeneity of the crystalline material as well as the stability and homogeneity of the solutions in the storage containers. In order to maintain the integrity of the assigned value(s), and associated uncertainty, the dilution or injection of a subsample of this product should be performed using calibrated measuring equipment.

UNCERTAINTY:

The maximum combined relative standard uncertainty of our reference standard solutions is calculated using the following equation:

The combined relative standard uncertainty, $u_c(y)$, of a value y and the uncertainty of the independent parameters

$$x_1, x_2,...x_n$$
 on which it depends is:

 $u_c(y(x_1, x_2, ...x_n)) = \sqrt{\sum_{i=1}^n u(y_i, x_i)^2}$

where x is expressed as a relative standard uncertainty of the individual parameter.

The individual uncertainties taken into account include those associated with weights (calibration of the balance) and volumes (calibration of the volumetric glassware). An expanded maximum combined percent relative uncertainty of $\pm 5\%$ (calculated with a coverage factor of 2 and a level of confidence of 95%) is stated on the Certificate of Analysis for all of our products.

TRACEABILITY:

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LIMITED WARRANTY:

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QUALITY MANAGEMENT:

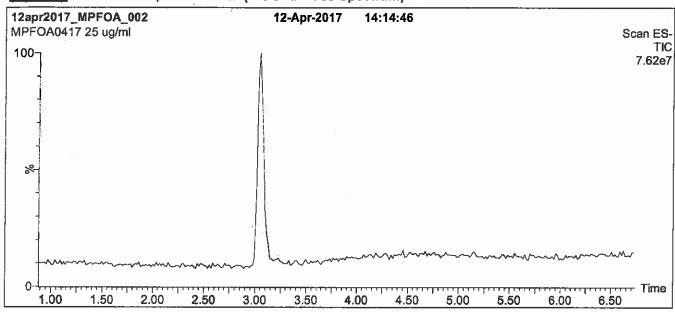
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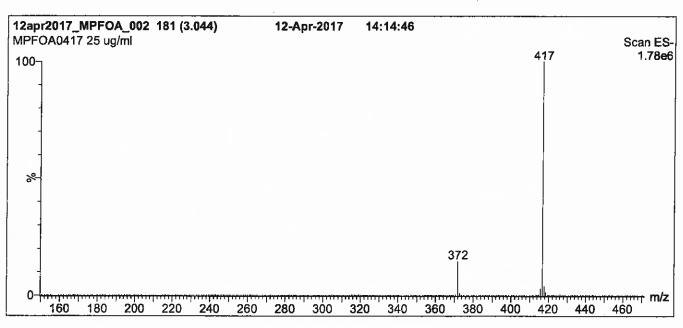




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Figure 1: MPFOA; LC/MS Data (TIC and Mass Spectrum)





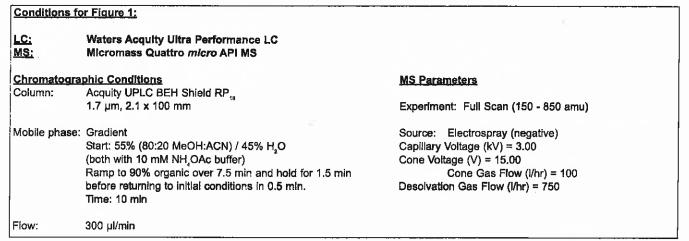
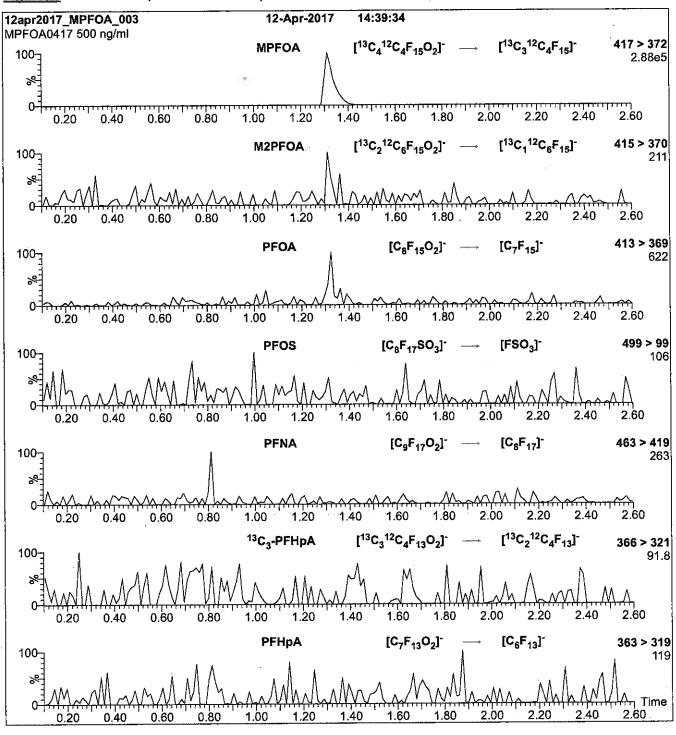
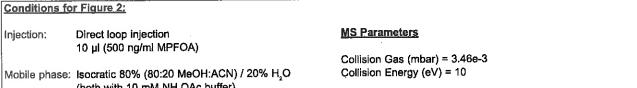


Figure 2: MPFOA; LC/MS/MS Data (Selected MRM Transitions)





(both with 10 mM NH₄OAc buffer)

Flow: 300 µl/min

LCMPFOS_00020



PRODUCT CODE:

MPFOS

LOT NUMBER:

MPFOS1216

COMPOUND:

Sodium perfluoro-1-[1,2,3,4-13C₄]octanesulfonate

STRUCTURE:

CAS #:

Not available

F F F F F F F F F

MOLECULAR FORMULA:

¹³C₄¹²C₄F₄,SO₃Na

MOLECULAR WEIGHT:

526.08

CONCENTRATION:

 $50.0 \pm 2.5 \,\mu g/ml$ (Na salt)

SOLVENT(S):

Methanol

CHEMICAL PURITY:

47.8 ± 2.4 μg/ml (MPFOS anion) >98%

ICOTORIO DI IDITA

≥99% ¹3C

LAST TESTED: (mm/dd/yyyy)

12/12/2016

ISOTOPIC PURITY:

(1,2,3,4-13C₄)

EXPIRY DATE: (mm/dd/yyyy)

12/12/2021

RECOMMENDED STORAGE:

Store ampoule in a cool, dark place

DOCUMENTATION/ DATA ATTACHED:

Figure 1: LC/MS Data (TIC and Mass Spectrum)

Figure 2: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

See page 2 for further details.

Contains ~ 0.8% Sodium perfluoro-1-[1,2,3-13C,]heptanesulfonate.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By:

B.G. Chittim

Date:

12/14/2016

The products prepared by Wellington Laboratories Inc. are for laboratory use only. This certified reference material (CRM) was designed to be used as a standard for the identification and/or quantification of the specific chemical compound it contains.

HAZARDS:

This product should only be used by qualified personnel familiar with its potential hazards and trained in the handling of hazardous chemicals. Due care should be exercised to prevent unnecessary human contact or ingestion. All procedures should be carried out in a well-functioning fume hood and suitable gloves, eye protection, and clothing should be worn at all times. Waste should be disposed of according to national and regional regulations. Safety Data Sheets (SDSs) are available upon request.

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UNCERTAINTY:

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 $x_{ij}, x_{ij},...,x_{ij}$ on which it depends is:

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where x is expressed as a relative standard uncertainty of the individual parameter.

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EXPIRY DATE / PERIOD OF VALIDITY:

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LIMITED WARRANTY:

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QUALITY MANAGEMENT:

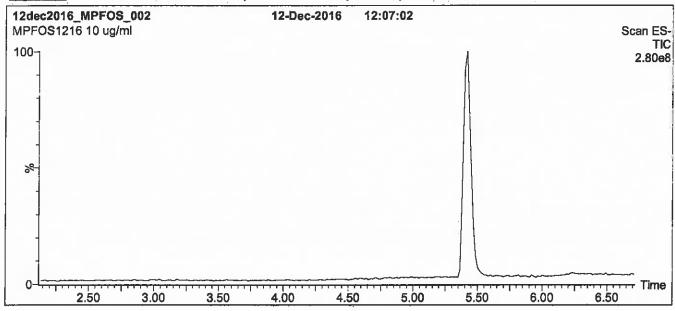
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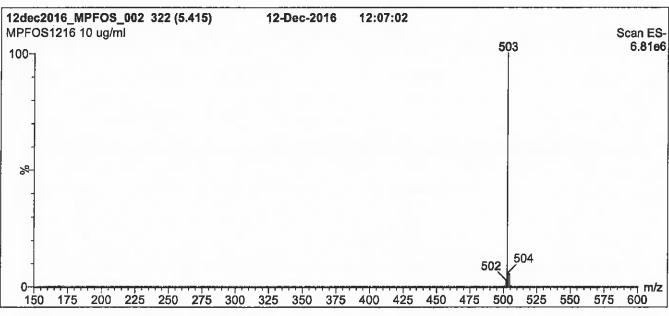


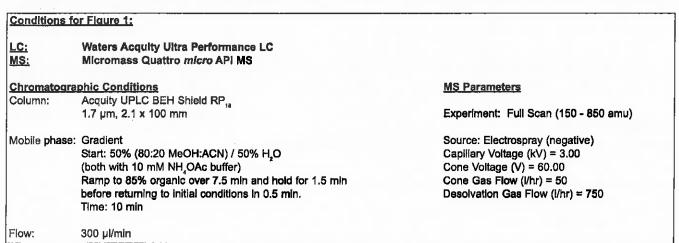


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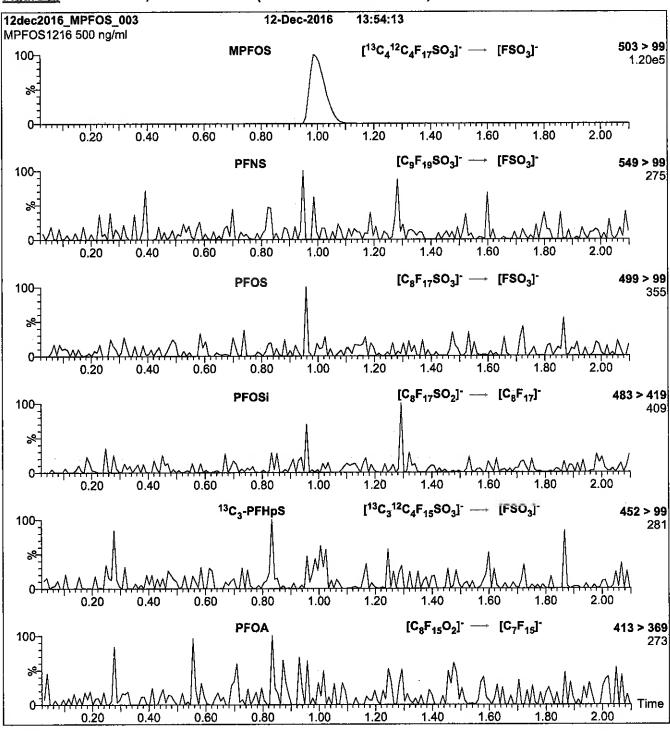
Figure 1: MPFOS; LC/MS Data (TIC and Mass Spectrum)

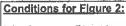






MPFOS; LC/MS/MS Data (Selected MRM Transitions) Figure 2:





Injection:

Flow:

Direct loop injection

10 µl (500 ng/ml MPFOS)

Mobile phase: Isocratic 80% (80:20 MeOH:ACN) / 20% H₂O

(both with 10 mM NH₂OAc buffer)

300 µl/mln

MS Parameters

Collision Gas (mbar) = 3.35e-3

Collision Energy (eV) = 40

LCMPFOS_00022



PRODUCT CODE:

MPFOS

LOT NUMBER:

MPFOS1216

COMPOUND:

Sodium perfluoro-1-[1,2,3,4-13C₄]octanesulfonate

STRUCTURE:

CAS #:

Not available

MOLECULAR FORMULA:

¹³C₄¹²C₄F₄,SO₃Na

MOLECULAR WEIGHT:

526.08

CONCENTRATION:

50.0 ± 2.5 µg/ml (Na salt)

SOLVENT(S):

Methanol

CHEMICAL PURITY:

>98%

ISOTOPIC PURITY:

≥99% ¹³C

(1,2,3,4-13C₄)

LAST TESTED: (mm/dd/yyyy)

12/12/2016

EXPIRY DATE: (mm/dd/yyyy)

12/12/2021

RECOMMENDED STORAGE:

Store ampoule in a cool, dark place

 $47.8 \pm 2.4 \,\mu g/ml$ (MPFOS anion)

DOCUMENTATION/ DATA ATTACHED:

Figure 1: LC/MS Data (TIC and Mass Spectrum)

Figure 2: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

See page 2 for further details.

Contains ~ 0.8% Sodium perfluoro-1-[1,2,3-13C]heptanesulfonate.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By:

Wellington Laboratories Inc., 345 Southgate Dr. Guelph ON N1G 3M5 CANADA 519-822-2436 • Fax: 519-822-2849 • info@well-labs.com

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HAZARDS:

This product should only be used by qualified personnel familiar with its potential hazards and trained in the handling of hazardous chemicals. Due care should be exercised to prevent unnecessary human contact or ingestion. All procedures should be carried out in a well-functioning fume hood and suitable gloves, eye protection, and clothing should be worn at all times. Waste should be disposed of according to national and regional regulations. Safety Data Sheets (SDSs) are available upon request.

SYNTHESIS / CHARACTERIZATION:

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HOMOGENEITY:

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UNCERTAINTY:

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TRACEABILITY:

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EXPIRY DATE / PERIOD OF VALIDITY:

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LIMITED WARRANTY:

At the time of shipment, all products are warranted to be free of defects in material and workmanship and to conform to the stated technical and purity specifications.

QUALITY MANAGEMENT:

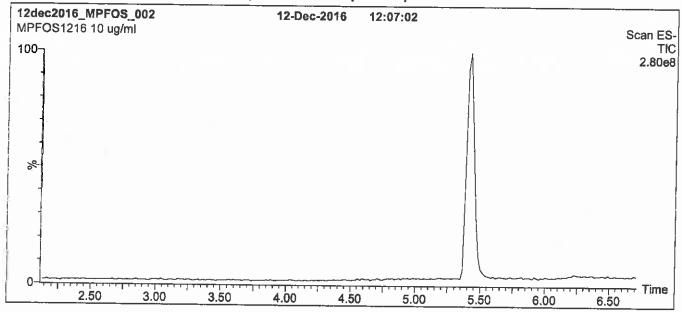
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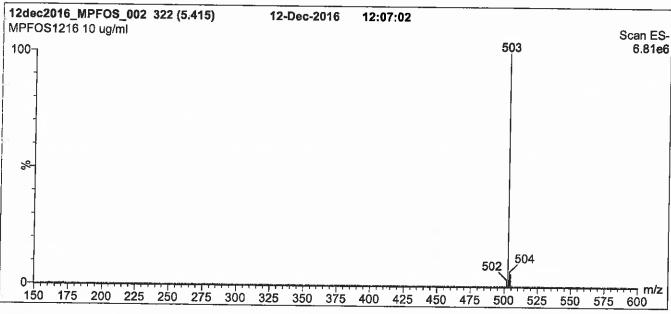




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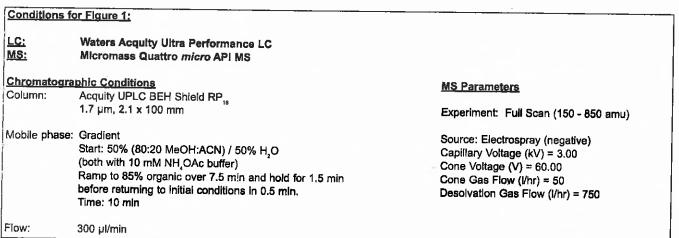
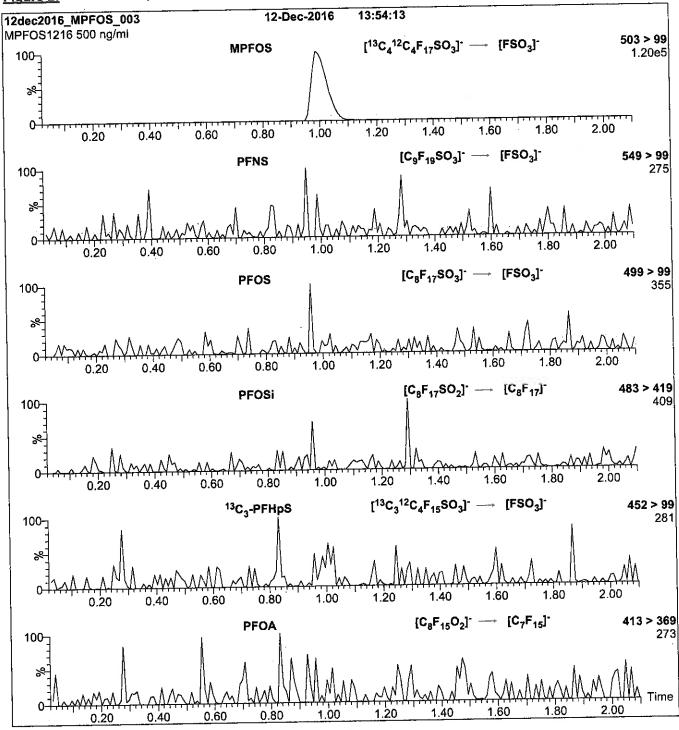
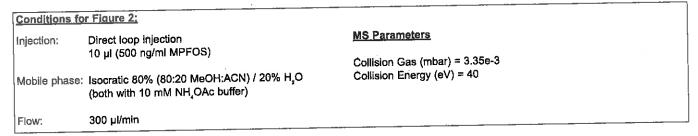


Figure 2: MPFOS; LC/MS/MS Data (Selected MRM Transitions)





LCMPFUdA_00010



PRODUCT CODE:

MPFUdA

LOT NUMBER:

MPFUdA1116

COMPOUND:

STRUCTURE:

Perfluoro-n-[1,2-13C,]undecanoic acid

CAS #:

Not available

F C C C C 13 13 C

MOLECULAR FORMULA:

¹³C₂ ¹²C₃HF₃O₃

 $50 \pm 2.5 \,\mu g/ml$

MOLECULAR WEIGHT:

ISOTOPIC PURITY:

566.08 Methanol

CONCENTRATION:

SOLVENT(S):

Water (<1%)

≥99% 13C

(1,2-13C₂)

CHEMICAL PURITY: LAST TESTED: (mm/dd/ww)

>98%

11/22/2016

EXPIRY DATE: (mm/dd/yyyy)

11/22/2021

RECOMMENDED STORAGE:

Store ampoule in a cool, dark place

DOCUMENTATION/ DATA ATTACHED:

Figure 1: LC/MS Data (TIC and Mass Spectrum)

Figure 2: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

See page 2 for further details.

Contains 4 mole eq. of NaOH to prevent conversion of the carboxylic acid to the methyl ester.

Presence of 1-13C,-PFUdA (~1%; see Figure 2), 2-13C,-PFUdA (~1%), and PFUdA (~0.2%; see Figure 2) are due to the isotopic purity of the ¹³C-precursor.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By:

Date: 12/07/2016

Wellington Laboratories Inc., 345 Southgate Dr. Guelph ON N1G 3M5 CANADA 519-822-2436 • Fax: 519-822-2849 • info@well-labs.com

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HOMOGENEITY:

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QUALITY MANAGEMENT:

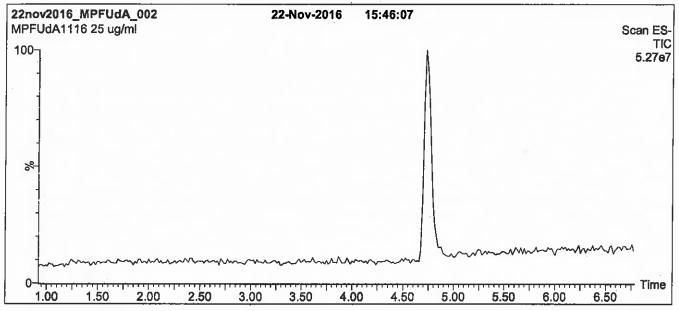
This product was produced using a Quality Management System registered to the latest versions of ISO 9001 by SAI Global, ISO/IEC 17025 by the Canadian Association for Laboratory Accreditation Inc. (CALA; A 1226), and ISO GUIDE 34 by ANSI-ASQ National Accreditation Board (ANAB; AR-1523).

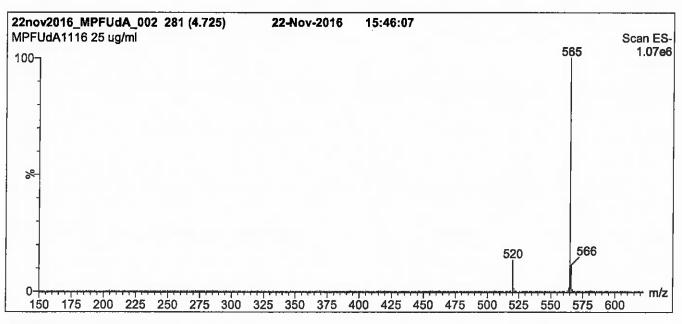




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Figure 1: MPFUdA; LC/MS Data (TIC and Mass Spectrum)





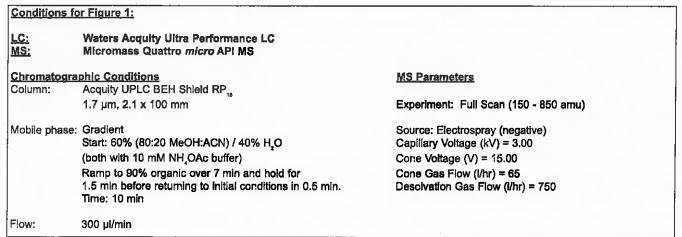
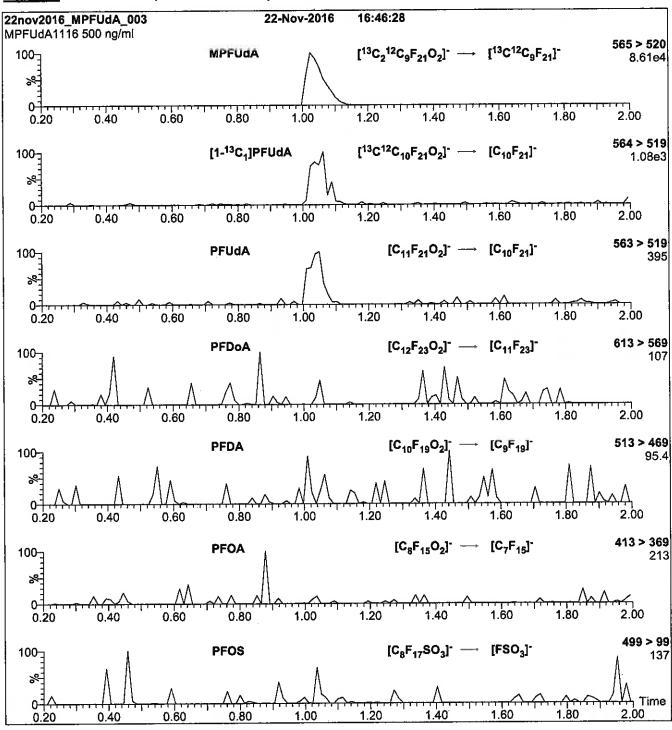
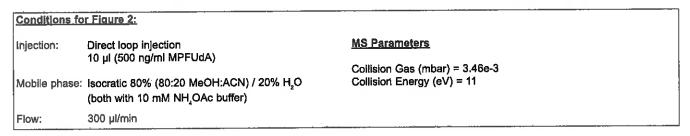


Figure 2: MPFUdA; LC/MS/MS Data (Selected MRM Transitions)





LCMPFUdA_00011



PRODUCT CODE:

MPFUdA

LOT NUMBER:

MPFUdA1116

COMPOUND:

Perfluoro-n-[1,2-13C]undecanoic acid

STRUCTURE:

CAS #:

Not available

MOLECULAR FORMULA:

 $^{13}C_{_{2}}^{_{12}}C_{_{9}}HF_{_{21}}O_{_{2}}$

MOLECULAR WEIGHT:

566.08

CONCENTRATION:

50 ± 2.5 μg/ml

SOLVENT(S):

ISOTOPIC PURITY:

Methanol

CHEMICAL PURITY:

>98%

Water (<1%) ≥99% ¹³C

LAST TESTED: (mm/dd/yyyy)

11/22/2016

EXPIRY DATE: (mm/dd/yyyy)

11/22/2021

RECOMMENDED STORAGE:

Store ampoule in a cool, dark place

(1,2-13C₂)

DOCUMENTATION/ DATA ATTACHED:

Figure 1: LC/MS Data (TIC and Mass Spectrum)

Figure 2: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

See page 2 for further details.

Contains 4 mole eq. of NaOH to prevent conversion of the carboxylic acid to the methyl ester.

Presence of 1-13C₁-PFUdA (~1%; see Figure 2), 2-13C₁-PFUdA (~1%), and PFUdA (~0.2%; see Figure 2) are due to the isotopic purity of the 13C-precursor.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By:

B.G. Chiltim

Date: 12/07/2016

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HAZARDS:

This product should only be used by qualified personnel familiar with its potential hazards and trained in the handling of hazardous chemicals. Due care should be exercised to prevent unnecessary human contact or ingestion. All procedures should be carried out in a well-functioning fume hood and suitable gloves, eye protection, and clothing should be worn at all times. Waste should be disposed of according to national and regional regulations. Safety Data Sheets (SDSs) are available upon request.

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UNCERTAINTY;

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$$x_1, x_2, \dots x_n$$
 on which it depends is:

$$u_c(y(x_1, x_2, ...x_n)) = \sqrt{\sum_{i=1}^n u(y_i, x_i)^2}$$

where x is expressed as a relative standard uncertainty of the individual parameter.

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LIMITED WARRANTY:

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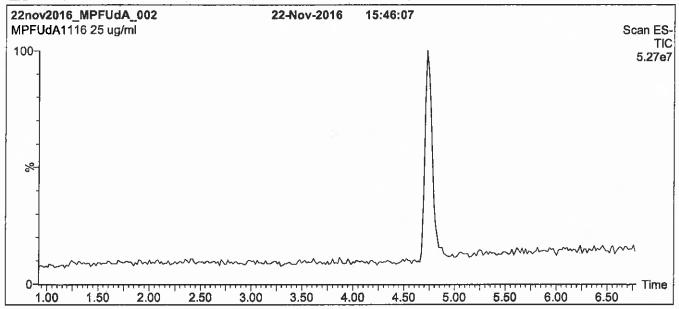
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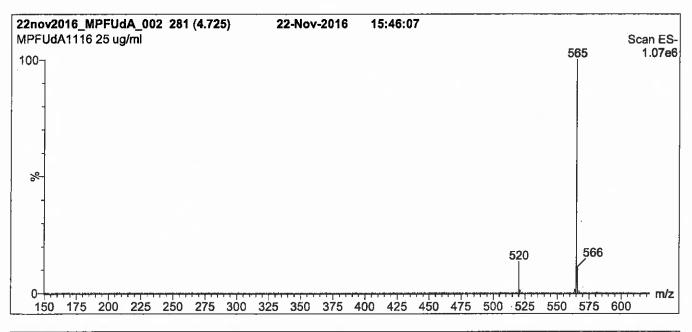




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Figure 1: MPFUdA; LC/MS Data (TIC and Mass Spectrum)





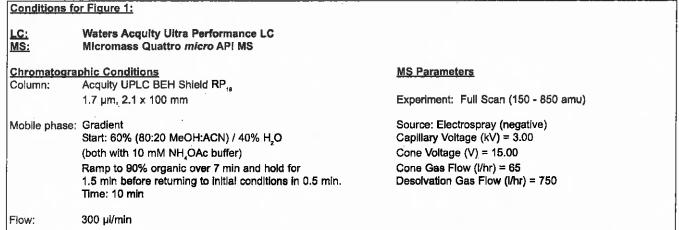
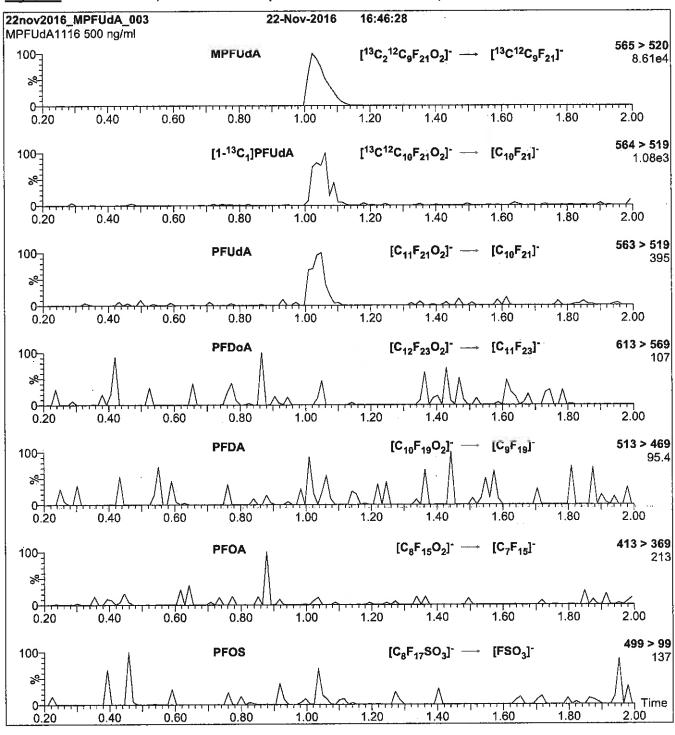
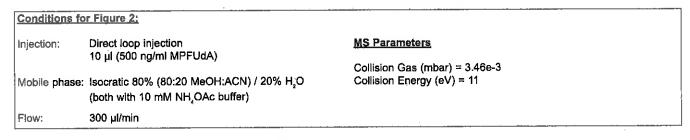


Figure 2: MPFUdA; LC/MS/MS Data (Selected MRM Transitions)





LCN-EtFOSA-M_00003

PRODUCT CODE:

N-EtFOSA-M

LOT NUMBER:

MOLECULAR WEIGHT:

SOLVENT(S):

NEtFOSA0516M

527.20

Methanol

COMPOUND:

N-ethylperfluoro-1-octanesulfonamide

CAS #:

4151-50-2

STRUCTURE:

F C C C C C SO₂N C₂H₁

MOLECULAR FORMULA:

 $C_{10}H_8F_{17}NO_2S$

CONCENTRATION:

 $50 \pm 2.5 \,\mu\text{g/ml}$

CHEMICAL PURITY:

>98%

LAST TESTED: (mm/dd/yyyy)

05/24/2016

EXPIRY DATE: (mm/dd/yyyy)

05/24/2021

RECOMMENDED STORAGE:

Store ampoule in a cool, dark place

DOCUMENTATION/ DATA ATTACHED:

Figure 1: LC/MS Data (TIC and Mass Spectrum)

Figure 2: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

See page 2 for further details.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By:

B.G. Chittim

Date:

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EXPIRY DATE / PERIOD OF VALIDITY:

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LIMITED WARRANTY:

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QUALITY MANAGEMENT:

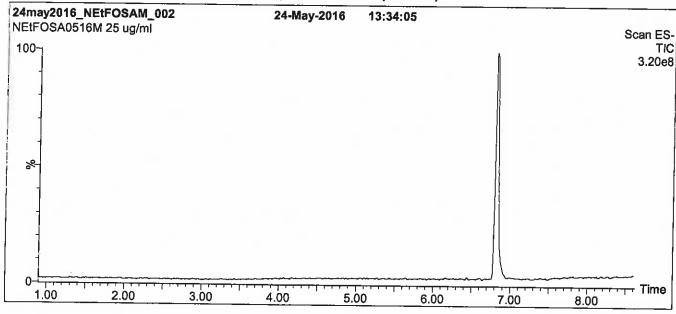
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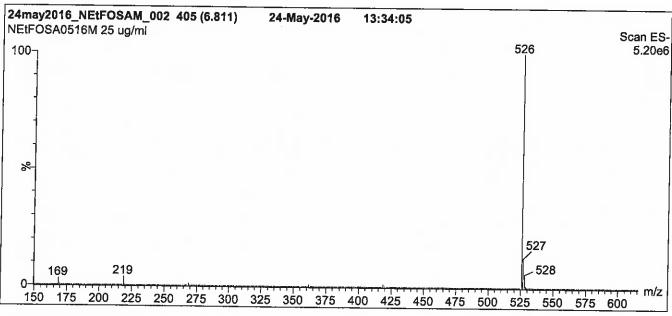




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Figure 1: N-EtFOSA-M; LC/MS Data (TIC and Mass Spectrum)





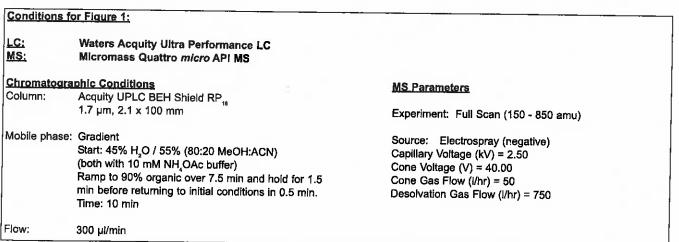
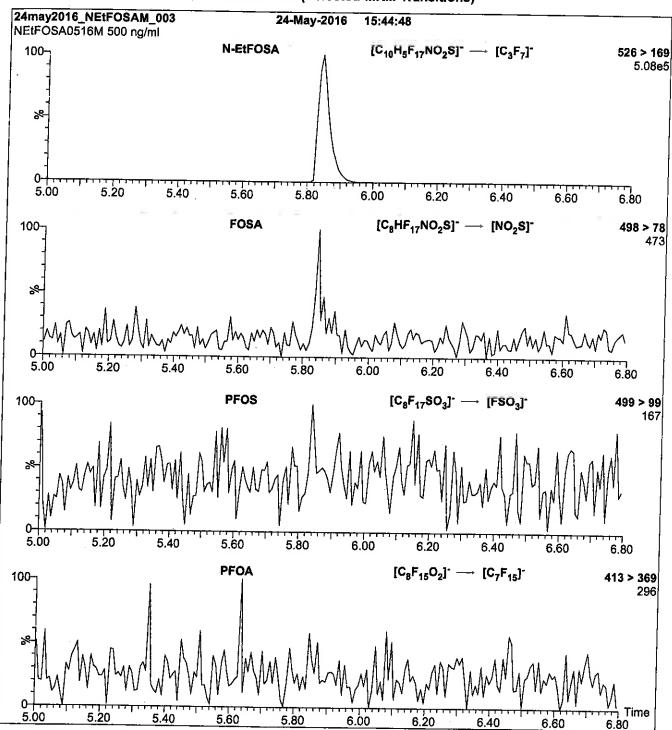
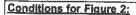


Figure 2: N-EtFOSA-M; LC/MS/MS Data (Selected MRM Transitions)





Injection:

Direct loop Injection

10 μl (500 ng/ml N-EtFOSA-M)

Mobile phase: Isocratic 80% (80:20 MeOH:ACN) / 20% H₂O

(both with 10 mM NH OAc buffer)

300 µl/min Flow:

MS Parameters

Collision Gas (mbar) = 3.54e-3 Collision Energy (eV) = 30

LCN-EtFOSA-M_00004



PRODUCT CODE:

N-EtFOSA-M

LOT NUMBER:

NEtFOSA0516M

COMPOUND:

N-ethylperfluoro-1-octanesulfonamide

CAS #:

4151-50-2

STRUCTURE:

CONCENTRATION:

MOLECULAR FORMULA:

C,H,F,NO2S $50 \pm 2.5 \,\mu g/ml$

CHEMICAL PURITY:

>98%

LAST TESTED: (mm/dd/yyyy) EXPIRY DATE: (mm/dd/yyyy)

05/24/2016 05/24/2021

RECOMMENDED STORAGE:

Store ampoule in a cool, dark place

MOLECULAR WEIGHT:

527.20

SOLVENT(S):

Methanol

DOCUMENTATION/ DATA ATTACHED:

Figure 1: LC/MS Data (TIC and Mass Spectrum)

Figure 2: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

See page 2 for further details.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By:

Date: 05/27/2016

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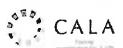
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LIMITED WARRANTY:

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QUALITY MANAGEMENT:

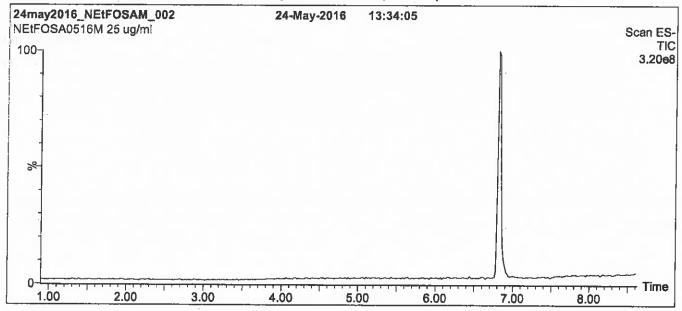
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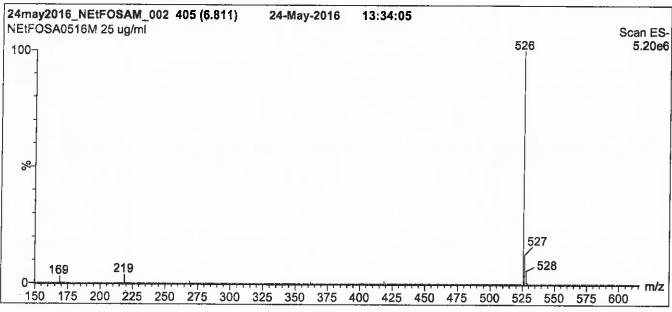




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Figure 1: N-EtFOSA-M; LC/MS Data (TIC and Mass Spectrum)





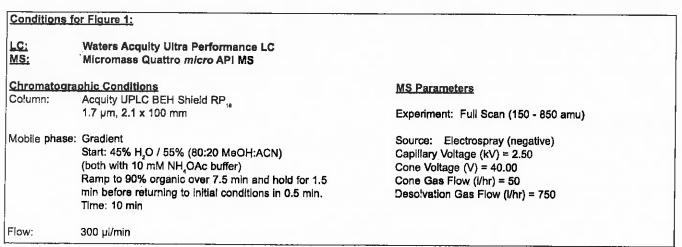
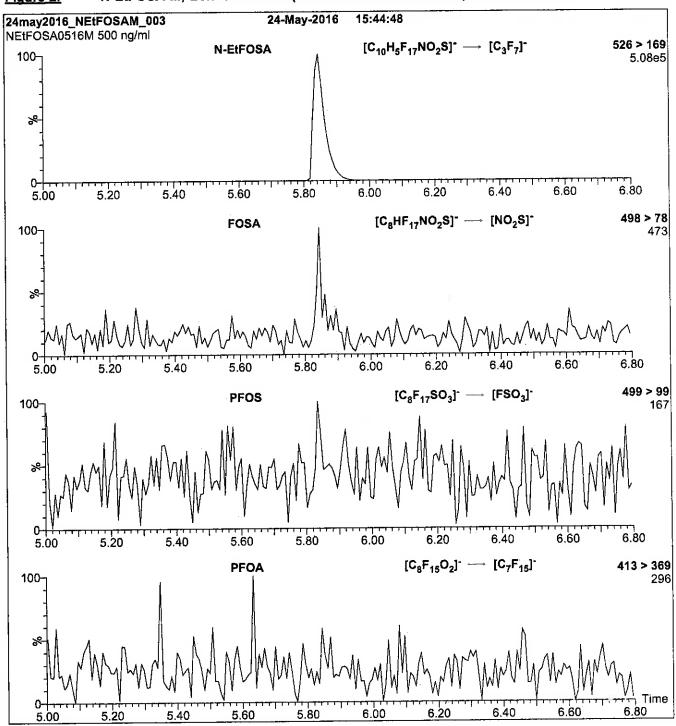
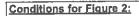


Figure 2: N-EtFOSA-M; LC/MS/MS Data (Selected MRM Transitions)





Injection:

Flow:

Direct loop injection

10 µl (500 ng/ml N-EtFOSA-M)

Mobile phase: Isocratic 80% (80:20 MeOH:ACN) / 20% H₂O

(both with 10 mM NH OAc buffer)

(bo

300 µl/min

MS Parameters

Collision Gas (mbar) = 3.54e-3 Collision Energy (eV) = 30

LCN-EtFOSAA_00002





PRODUCT CODE:

N-EtFOSAA

LOT NUMBER:

NEtFOSAA0116

COMPOUND:

N-ethylperfluoro-1-octanesulfonamidoacetic acid

STRUCTURE:

CAS #:

2991-50-6

MOLECULAR FORMULA:

C₁₂H₈F₁₇NO₄S

MOLECULAR WEIGHT:

585.23

CONCENTRATION:

 $50 \pm 2.5 \,\mu g/ml$

SOLVENT(S):

Methanol

Water (<1%)

CHEMICAL PURITY:

>98%

LAST TESTED: (mm/dd/yyyy)

01/20/2016

EXPIRY DATE: (mm/dd/yyyy)

01/20/2021

RECOMMENDED STORAGE:

Refrigerate ampoule

DOCUMENTATION/ DATA ATTACHED:

Figure 1: LC/MS Data (TIC and Mass Spectrum)

Figure 2: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

See page 2 for further details.

Contains 4 mole eq. of NaOH to prevent the conversion of the acetic acid molety to the methyl ester.

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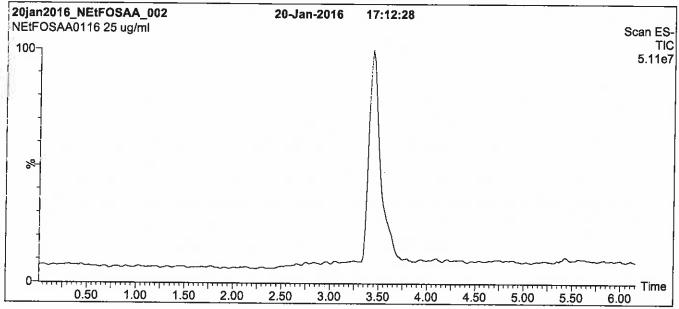
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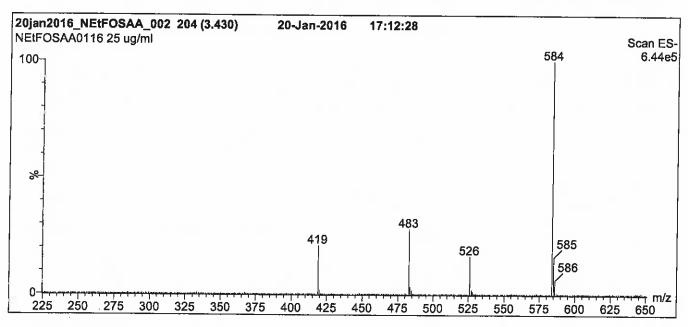




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Figure 1: N-EtFOSAA; LC/MS Data (TIC and Mass Spectrum)





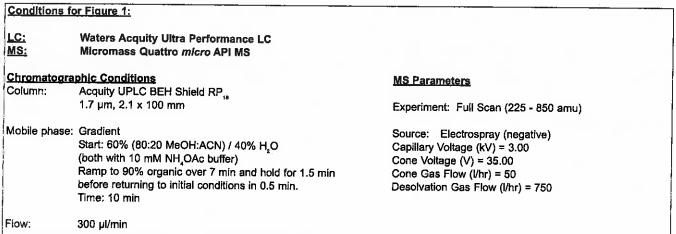
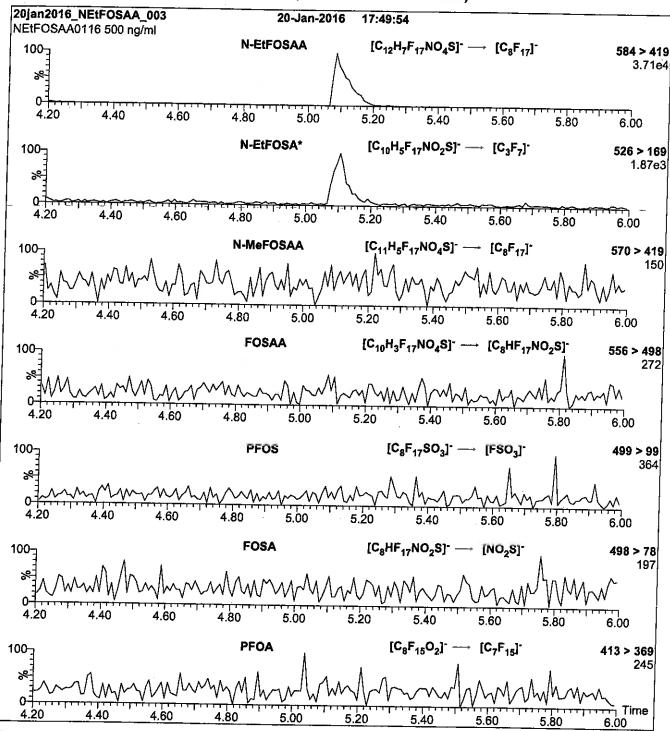
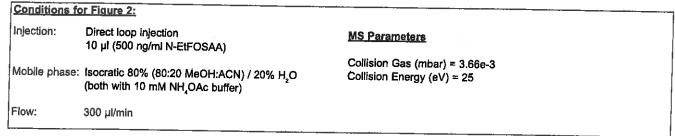


Figure 2: N-EtFOSAA; LC/MS/MS Data (Selected MRM Transitions)



Note: N-EtFOSA is formed by fragmentation of N-EtFOSAA.



LCN-EtFOSAA_00003



PRODUCT CODE:

N-EtFOSAA

LOT NUMBER:

NEtFOSAA0916

COMPOUND:

N-ethylperfluoro-1-octanesulfonamidoacetic acid

STRUCTURE:

CAS #:

2991-50-6

MOLECULAR FORMULA:

C₁₂H_BF₁₇NO₄S

MOLECULAR WEIGHT:

585.23

CONCENTRATION:

 $50 \pm 2.5 \mu g/m!$

SOLVENT(S):

Methanol Water (<1%)

CHEMICAL PURITY:

>98%

LAST TESTED: (mm/dd/yyyy)

09/30/2016

EXPIRY DATE: (mm/dd/yyyy)

09/30/2021

RECOMMENDED STORAGE:

Refrigerate ampoule

DOCUMENTATION/ DATA ATTACHED:

Figure 1: LC/MS Data (TIC and Mass Spectrum)

Figure 2: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

See page 2 for further details.

Contains 4 mole eq. of NaOH to prevent the conversion of the acetic acid molety to the methyl ester.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By:

Date: 10/07/2016

The products prepared by Wellington Laboratories Inc. are for laboratory use only. This certified reference material (CRM) was designed to be used as a standard for the identification and/or quantification of the specific chemical compound it contains.

HAZARDS:

This product should only be used by qualified personnel familiar with its potential hazards and trained in the handling of hazardous chemicals. Due care should be exercised to prevent unnecessary human contact or ingestion. All procedures should be carried out in a well-functioning fume hood and suitable gloves, eye protection, and clothing should be worn at all times. Waste should be disposed of according to national and regional regulations. Safety Data Sheets (SDSs) are available upon request.

SYNTHESIS / CHARACTERIZATION:

Where possible, all of our products are synthesized using single-product unambiguous routes. They are then characterized, and their structures and purities confirmed, using a combination of the most relevant techniques, such as NMR, GC/MS, LC/MS/MS, SFC/UV/MS/MS, x-ray crystallography, and melting point. Isotopic purities of mass-labelled compounds are also confirmed using HRGC/HRMS and/or LC/MS/MS.

HOMOGENEITY:

Prior to solution preparation, crystalline material is tested for homogeneity using a variety of techniques (as stated above) and its solubility in a given diluent is taken into consideration. Duplicate solutions of a new product are prepared from the same crystalline lot and, after the addition of an appropriate internal standard, they are compared by GC/MS, LC/MS/MS and/or SFC/UV/MS/MS. The relative response factors of the analyte of interest in each solution are required to be <5% RSD. New solution lots of existing products are compared to older lots in the same manner, which further confirms the homogeneity of the crystalline material as well as the stability and homogeneity of the solutions in the storage containers.

UNCERTAINTY:

The maximum combined relative standard uncertainty of our reference standard solutions is calculated using the following equation:

The combined relative standard uncertainty, $u_c(y)$, of a value y and the uncertainty of the independent parameters

$$x_1, x_2, ..., x_n$$
 on which it depends is:

$$u_c(y(x_1, x_2, ...x_n)) = \sqrt{\sum_{i=1}^n u(y, x_i)^2}$$

where x is expressed as a relative standard uncertainty of the individual parameter.

The individual uncertainties taken into account include those associated with weights (calibration of the balance) and volumes (calibration of the volumetric glassware). An expanded maximum combined percent relative uncertainty of ±5% (calculated with a coverage factor of 2 and a level of confidence of 95%) is stated on the Certificate of Analysis for all of our products.

TRACEABILITY:

All reference standard solutions are traceable to specific crystalline lots. The microbalances used for solution preparation are regularly tested by an external ISO/IEC 17025 accredited calibration company. In addition, their calibration is verified prior to each weighing using NIST and/or NRC traceable external weights. All volumetric glassware used is of Class A tolerance and has been tested according to the appropriate ASTM procedures, which are ultimately traceable to NIST. For certain products, traceability to international interlaboratory studies has also been established.

EXPIRY DATE / PERIOD OF VALIDITY:

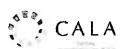
Ongoing stability studies of this product have demonstrated stability in its composition and concentration, until the specified expiry date, in the unopened ampoule. Monitoring for any degradation or change in concentration of the listed analyte(s) is performed on a routine basis.

LIMITED WARRANTY:

At the time of shipment, all products are warranted to be free of defects in material and workmanship and to conform to the stated technical and purity specifications.

QUALITY MANAGEMENT:

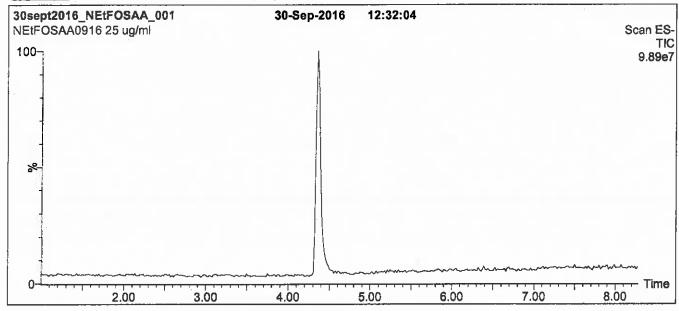
This product was produced using a Quality Management System registered to the latest versions of ISO 9001 by SAI Global, ISO/IEC 17025 by the Canadian Association for Laboratory Accreditation Inc. (CALA; A 1226), and ISO GUIDE 34 by ANSI-ASQ National Accreditation Board (ANAB; AR-1523).

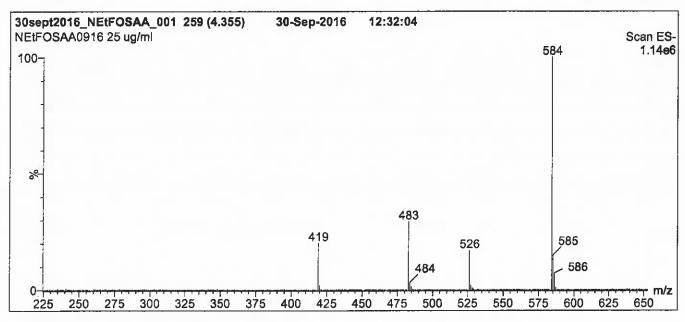




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Figure 1: N-EtFOSAA; LC/MS Data (TIC and Mass Spectrum)





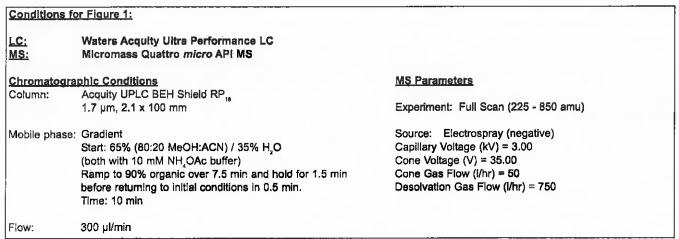
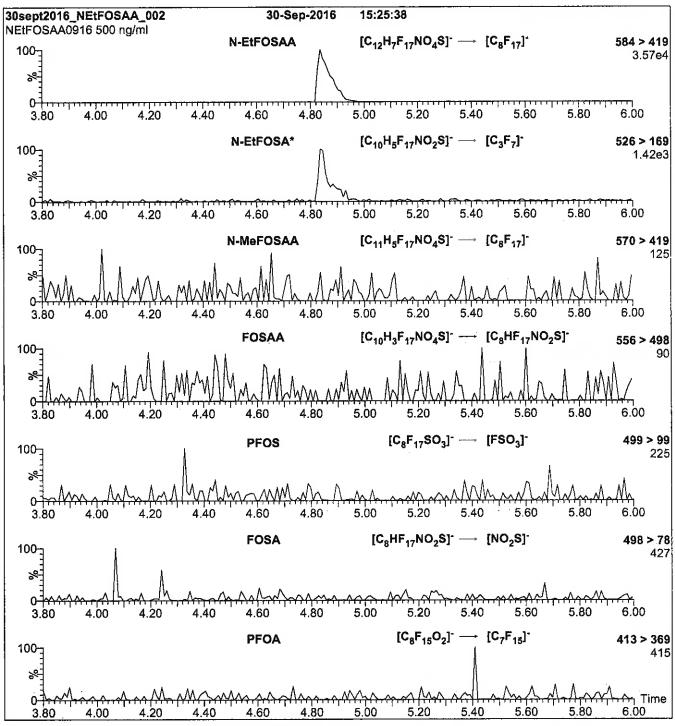
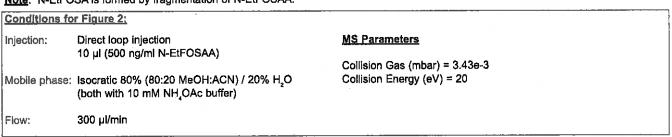


Figure 2: N-EtFOSAA; LC/MS/MS Data (Selected MRM Transitions)



Note: N-EtFOSA is formed by fragmentation of N-EtFOSAA.



LCN-MeFOSA-M_00002



WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE:

N-MeFOSA-M

LOT NUMBER:

MOLECULAR WEIGHT:

SOLVENT(S):

NMeFOSA0516M

513.17

Methanol

COMPOUND:

N-methylperfluoro-1-octanesulfonamide

CAS #:

31506-32-8

STRUCTURE:

MOLECULAR FORMULA:

C₉H₄F₁₇NO₂S

CONCENTRATION:

 $50 \pm 2.5 \,\mu g/ml$

CHEMICAL PURITY:

>98%

LAST TESTED: (mm/dd/yyyy)

05/24/2016

EXPIRY DATE: (mm/dd/yyyy)

05/24/2021

RECOMMENDED STORAGE:

Store ampoule in a cool, dark place

DOCUMENTATION/ DATA ATTACHED:

Figure 1: LC/MS Data (TIC and Mass Spectrum)

Figure 2: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

See page 2 for further details.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By:

Date: 05/26/2016

Wellington Laboratories Inc., 345 Southgate Dr. Guelph ON N1G 3M5 CANADA 519-822-2436 • Fax: 519-822-2849 • Info@well-labs.com

The products prepared by Wellington Laboratories Inc. are for laboratory use only. This certified reference material (CRM) was designed to be used as a standard for the identification and/or quantification of the specific chemical compound it contains.

HAZARDS:

This product should only be used by qualified personnel familiar with its potential hazards and trained in the handling of hazardous chemicals. Due care should be exercised to prevent unnecessary human contact or ingestion. All procedures should be carried out in a well-functioning fume hood and suitable gloves, eye protection, and clothing should be worn at all times. Waste should be disposed of according to national and regional regulations. Safety Data Sheets (SDSs) are available upon request.

SYNTHESIS / CHARACTERIZATION:

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HOMOGENEITY:

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UNCERTAINTY:

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$$x_1, x_2,...x_n$$
 on which it depends is:

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where x is expressed as a relative standard uncertainty of the individual parameter.

The individual uncertainties taken into account include those associated with weights (calibration of the balance) and volumes (calibration of the volumetric glassware). An expanded maximum combined percent relative uncertainty of $\pm 5\%$ (calculated with a coverage factor of 2 and a level of confidence of 95%) is stated on the Certificate of Analysis for all of our products.

TRACEABILITY:

All reference standard solutions are traceable to specific crystalline lots. The microbalances used for solution preparation are regularly tested by an external ISO/IEC 17025 accredited calibration company. In addition, their calibration is verified prior to each weighing using NIST and/or NRC traceable external weights. All volumetric glassware used is of Class A tolerance and has been tested according to the appropriate ASTM procedures, which are ultimately traceable to NIST. For certain products, traceability to international interlaboratory studies has also been established.

EXPIRY DATE / PERIOD OF VALIDITY:

Ongoing stability studies of this product have demonstrated stability in its composition and concentration, until the specified expiry date, in the unopened ampoule. Monitoring for any degradation or change in concentration of the listed analyte(s) is performed on a routine basis.

LIMITED WARRANTY:

At the time of shipment, all products are warranted to be free of defects in material and workmanship and to conform to the stated technical and purity specifications.

QUALITY MANAGEMENT:

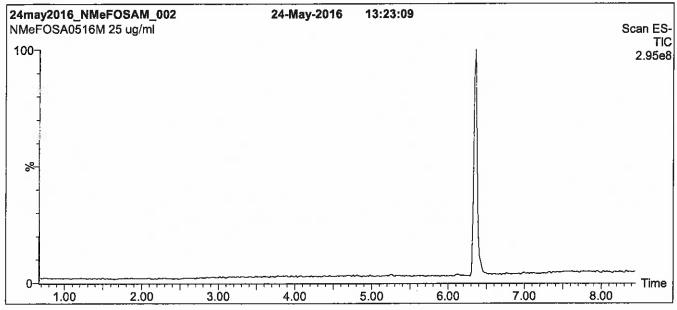
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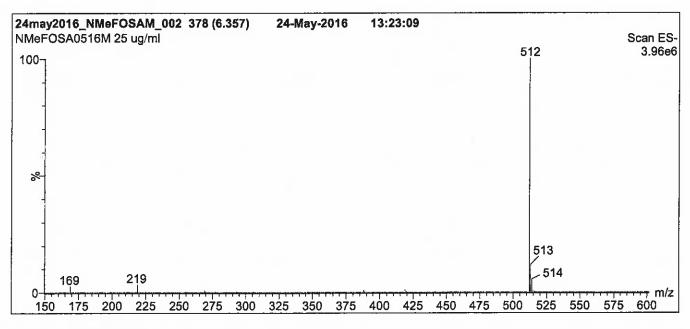




For additional information or assistance concerning this or any other products from Wellington Laboratories Inc., please visit our website at www.weil-labs.com or contact us directly at info@well-labs.com

Figure 1: N-MeFOSA-M; LC/MS Data (TIC and Mass Spectrum)





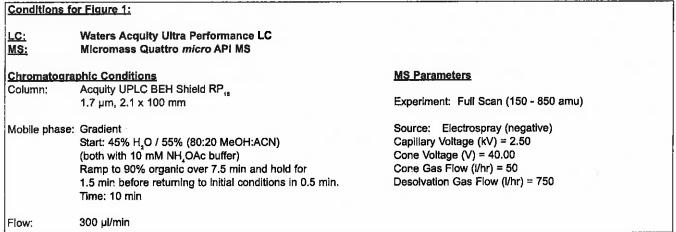
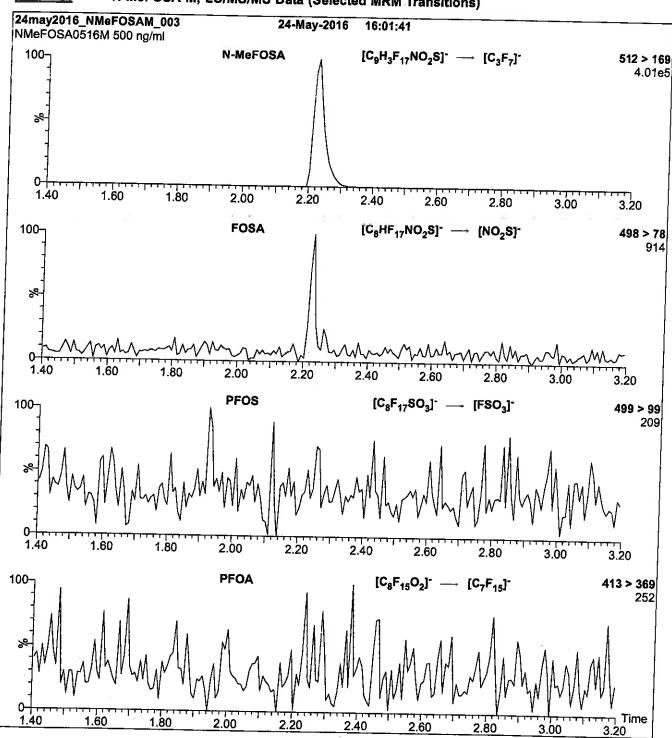
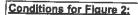


Figure 2: N-MeFOSA-M; LC/MS/MS Data (Selected MRM Transitions)





Injection:

Direct loop injection

10 μl (500 ng/ml N-MeFOSA-M)

Mobile phase: Isocratic 80% (80:20 MeOH:ACN) / 20% H,O

(both with 10 mM NH OAc buffer)

MS Parameters

Collision Gas (mbar) = 3.54e-3 Collision Energy (eV) = 30

Flow:

300 µl/min

LCN-MeFOSA-M_00003



PRODUCT CODE:

N-MeFOSA-M

COMPOUND:

STRUCTURE:

N-methylperfluoro-1-octanesulfonamide

CAS #:

LOT NUMBER:

MOLECULAR WEIGHT:

SOLVENT(S):

31506-32-8

NMeFOSA0516M

513.17

Methanol

MOLECULAR FORMULA:

C₈H₄F₁₇NO₂S

CONCENTRATION:

50 ± 2.5 µg/ml

CHEMICAL PURITY:

>98%

LAST TESTED: (mm/dd/yyyy)

05/24/2016

EXPIRY DATE: (mm/dd/yyy)

05/24/2021

RECOMMENDED STORAGE:

DOCUMENTATION/ DATA ATTACHED:

Store ampoule in a cool, dark place

Figure 1: LC/MS Data (TIC and Mass Spectrum)

Figure 2: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

See page 2 for further details.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By:

Date: 05/26/2016

The products prepared by Wellington Laboratories Inc. are for laboratory use only. This certified reference material (CRM) was designed to be used as a standard for the identification and/or quantification of the specific chemical compound it contains.

HAZARDS:

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SYNTHESIS / CHARACTERIZATION:

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HOMOGENEITY:

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TRACEABILITY:

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EXPIRY DATE / PERIOD OF VALIDITY:

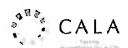
Ongoing stability studies of this product have demonstrated stability in its composition and concentration, until the specified expiry date, in the unopened ampoule. Monitoring for any degradation or change in concentration of the listed analyte(s) is performed on a routine basis.

LIMITED WARRANTY:

At the time of shipment, all products are warranted to be free of defects in material and workmanship and to conform to the stated technical and purity specifications.

QUALITY MANAGEMENT:

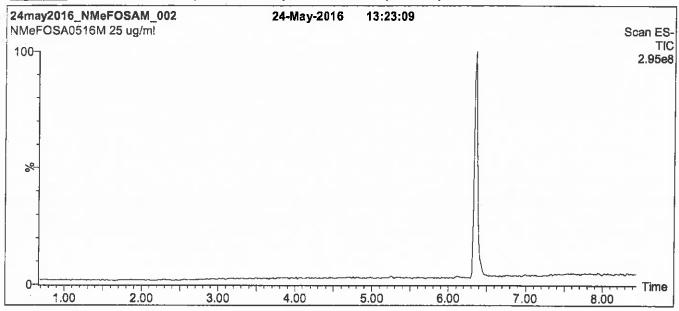
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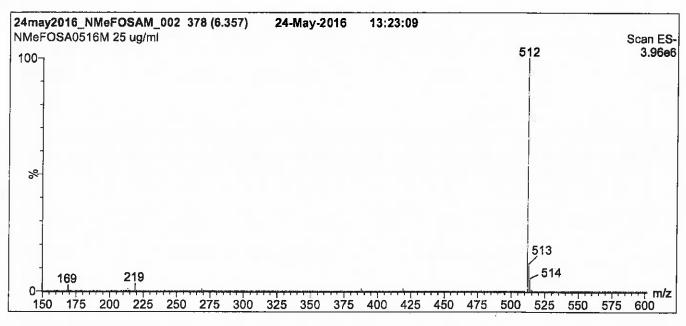


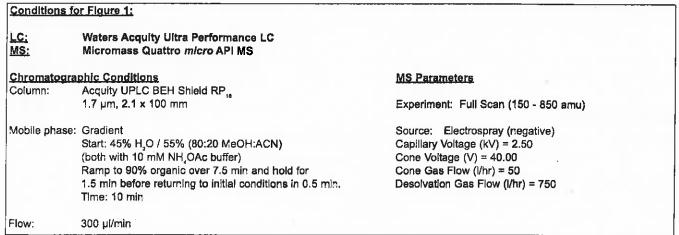


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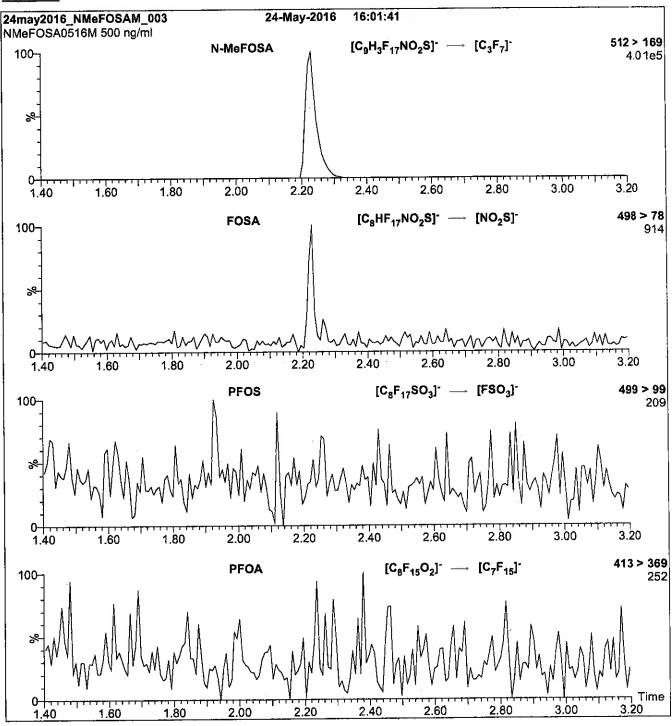


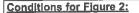






N-MeFOSA-M; LC/MS/MS Data (Selected MRM Transitions) Figure 2:





Injection:

Flow:

Direct loop injection

10 µl (500 ng/ml N-MeFOSA-M)

(both with 10 mM NH,OAc buffer)

Mobile phase: Isocratic 80% (80:20 MeOH:ACN) / 20% H₂O

300 µl/min

MS Parameters

Collision Gas (mbar) = 3.54e-3 Collision Energy (eV) = 30

LCN-MeFOSAA_00003



PRODUCT CODE:

N-MeFOSAA

LOT NUMBER:

NMeFOSAA0116

COMPOUND:

N-methylperfluoro-1-octanesulfonamidoacetic acid

STRUCTURE:

CAS #:

2355-31-9

MOLECULAR FORMULA:

C₁₁H₆F₁₇NO₄S

MOLECULAR WEIGHT:

571.21

CONCENTRATION:

50 ± 2.5 µg/ml

SOLVENT(S):

Methanol

Water (<1%)

CHEMICAL PURITY:

>98%

LAST TESTED: (mm/bd/yyyy)

01/20/2016

EXPIRY DATE: (mm/dd/yyyy)

01/20/2021

RECOMMENDED STORAGE:

Refrigerate ampoule

DOCUMENTATION/ DATA ATTACHED:

Figure 1: LC/MS Data (TIC and Mass Spectrum)

Figure 2: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

See page 2 for further details.

Contains 4 mole eq. of NaOH to prevent the conversion of the acetic acid moiety to the methyl ester.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By:

Date: 01/21/2016

Wellington Laboratories Inc., 345 Southgate Dr. Guelph ON N1G 3M5 CANADA 519-822-2436 • Fax: 519-822-2849 • Info@well-labs.com

The products prepared by Wellington Laboratories Inc. are for laboratory use only. This certified reference material (CRM) was designed to be used as a standard for the identification and/or quantification of the specific chemical compound it contains.

HAZARDS:

This product should only be used by qualified personnel familiar with its potential hazards and trained in the handling of hazardous chemicals. Due care should be exercised to prevent unnecessary human contact or ingestion. All procedures should be carried out in a well-functioning fume hood and suitable gloves, eye protection, and clothing should be worn at all times. Waste should be disposed of according to national and regional regulations. Safety Data Sheets (SDSs) are available upon request.

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EXPIRY DATE / PERIOD OF VALIDITY:

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LIMITED WARRANTY:

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QUALITY MANAGEMENT:

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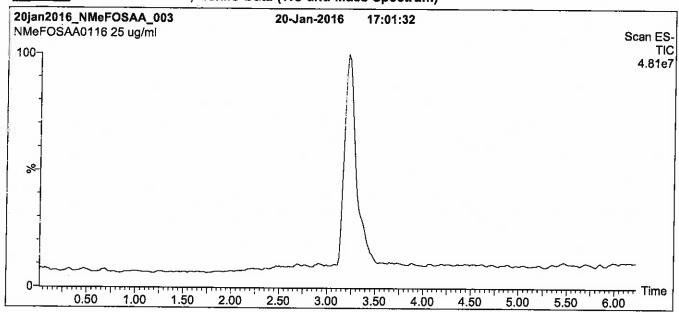


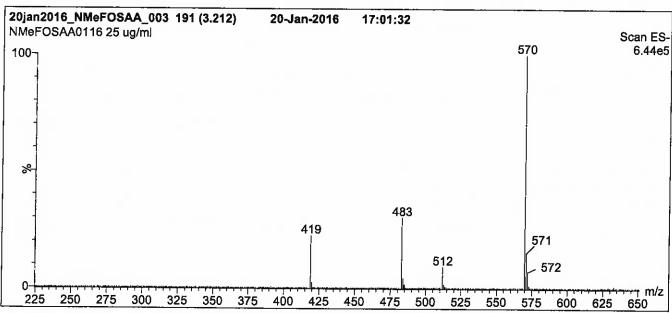


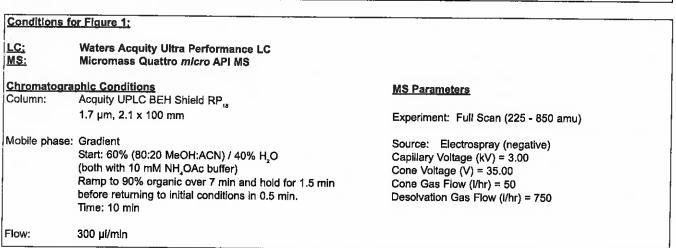
For additional information or assistance concerning this or any other products from Wellington Laboratories inc., please visit our website at www.weil-labs.com or contact us directly at info@weil-labs.com

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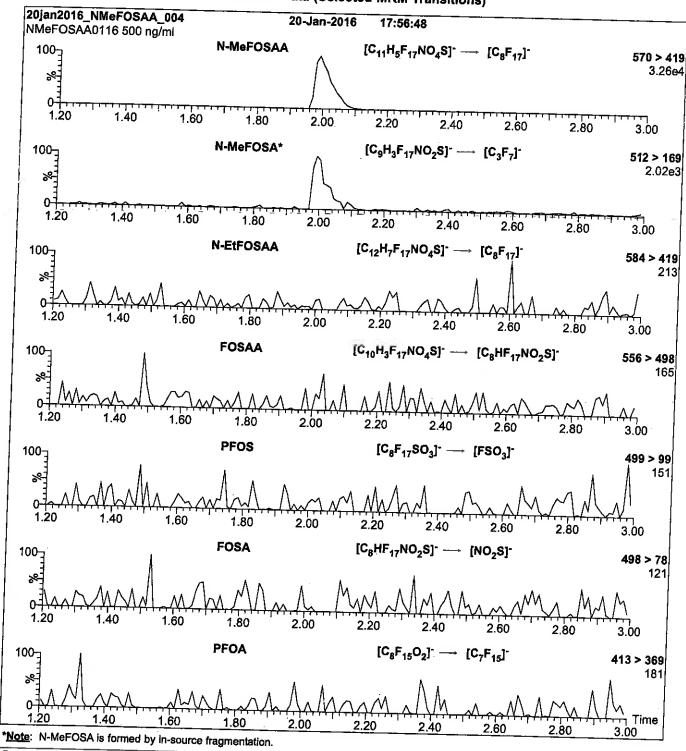
Figure 1: N-MeFOSAA; LC/MS Data (TIC and Mass Spectrum)

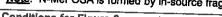


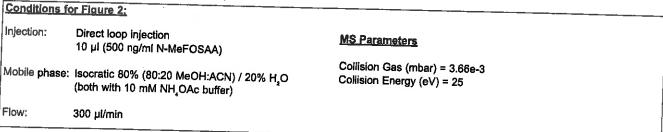




N-MeFOSAA; LC/MS/MS Data (Selected MRM Transitions) Figure 2:







LCN-MeFOSAA_00004



PRODUCT CODE:

N-MeFOSAA

LOT NUMBER:

NMeFOSAA0916

COMPOUND:

N-methylperfluoro-1-octanesulfonamidoacetic acid

STRUCTURE:

CAS #:

2355-31-9

MOLECULAR FORMULA:

C,H,F,,NO,S

MOLECULAR WEIGHT:

571.21

CONCENTRATION:

 $50 \pm 2.5 \, \mu g/ml$

SOLVENT(S):

Methanol

Water (<1%)

CHEMICAL PURITY:

>98%

LAST TESTED: (mm/dd/yyyy)

10/12/2016

EXPIRY DATE: (mm/dd/yyyy)

10/12/2021

RECOMMENDED STORAGE:

Refrigerate ampoule

DOCUMENTATION/ DATA ATTACHED:

Figure 1: LC/MS Data (TIC and Mass Spectrum)

Figure 2: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

See page 2 for further details.

Contains 4 mole eq. of NaOH to prevent the conversion of the acetic acid molety to the methyl ester,

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By:

Date: 10/25/2016

Wellington Laboratories Inc., 345 Southgate Dr. Guelph ON N1G 3M5 CANADA 519-822-2436 • Fax: 519-822-2849 • info@well-labs.com

The products prepared by Wellington Laboratories Inc. are for laboratory use only. This certified reference material (CRM) was designed to be used as a standard for the identification and/or quantification of the specific chemical compound it contains.

HAZARDS;

This product should only be used by qualified personnel familiar with its potential hazards and trained in the handling of hazardous chemicals. Due care should be exercised to prevent unnecessary human contact or ingestion. All procedures should be carried out in a well-functioning fume hood and suitable gloves, eye protection, and clothing should be worn at all times. Waste should be disposed of according to national and regional regulations. Safety Data Sheets (SDSs) are available upon request.

SYNTHESIS / CHARACTERIZATION:

Where possible, all of our products are synthesized using single-product unambiguous routes. They are then characterized, and their structures and purities confirmed, using a combination of the most relevant techniques, such as NMR, GC/MS, LC/MS/MS, SFC/UV/MS/MS, x-ray crystallography, and melting point. Isotopic purities of mass-labelled compounds are also confirmed using HRGC/HRMS and/or LC/MS/MS.

HOMOGENEITY:

Prior to solution preparation, crystalline material is tested for homogeneity using a variety of techniques (as stated above) and its solubility in a given diluent is taken into consideration. Duplicate solutions of a new product are prepared from the same crystalline lot and, after the addition of an appropriate internal standard, they are compared by GC/MS, LC/MS/MS and/or SFC/UV/MS/MS. The relative response factors of the analyte of interest in each solution are required to be <5% RSD. New solution lots of existing products are compared to older lots in the same manner, which further confirms the homogeneity of the crystalline material as well as the stability and homogeneity of the solutions in the storage containers.

UNCERTAINTY:

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The combined relative standard uncertainty, $u_{a}(y)$, of a value y and the uncertainty of the independent parameters

 $x_1, x_2, ..., x_n$ on which it depends is:

$$u_c(y(x_1, x_2, ...x_n)) = \sqrt{\sum_{i=1}^n u(y, x_i)^2}$$

where x is expressed as a relative standard uncertainty of the individual parameter.

The individual uncertainties taken into account include those associated with weights (calibration of the balance) and volumes (calibration of the volumetric glassware). An expanded maximum combined percent relative uncertainty of ±5% (calculated with a coverage factor of 2 and a level of confidence of 95%) is stated on the Certificate of Analysis for all of our products:

TRACEABILITY:

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EXPIRY DATE / PERIOD OF VALIDITY:

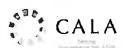
Ongoing stability studies of this product have demonstrated stability in its composition and concentration, until the specified expiry date, in the unopened ampoule. Monitoring for any degradation or change in concentration of the listed analyte(s) is performed on a routine basis.

LIMITED WARRANTY:

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QUALITY MANAGEMENT:

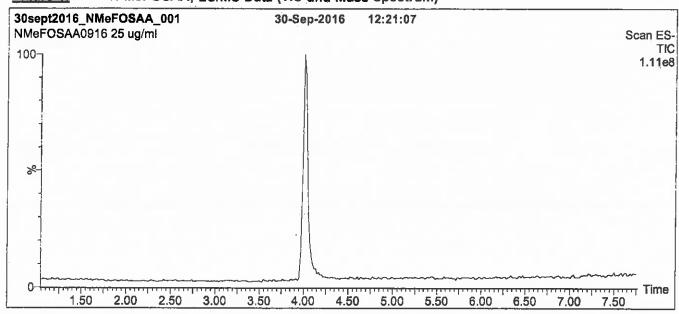
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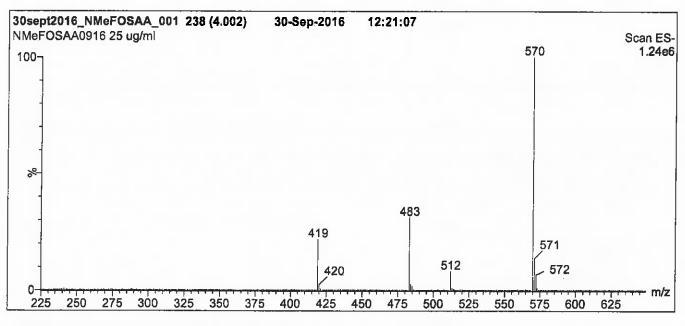




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Figure 1: N-MeFOSAA; LC/MS Data (TIC and Mass Spectrum)





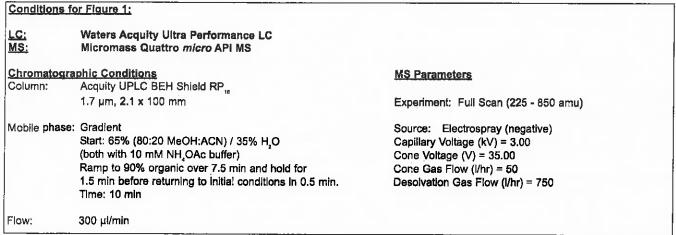
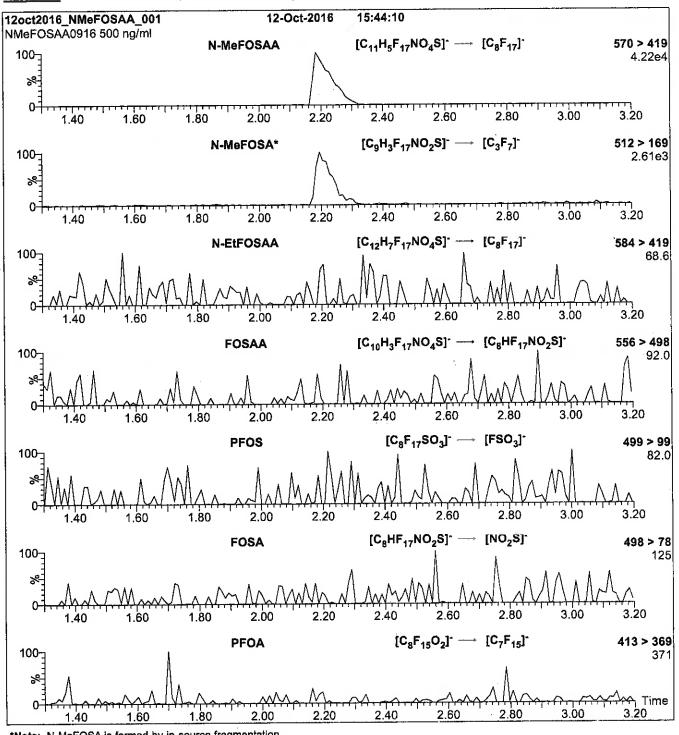
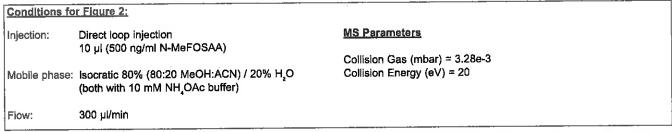


Figure 2: N-MeFOSAA; LC/MS/MS Data (Selected MRM Transitions)



*Note: N-MeFOSA is formed by in-source fragmentation.



LCPFACMXB_00007



PFAC-MXB

Solution/Mixture of Native Perfluoroalkylcarboxylic Acids and Native Perfluoroalkylsulfonates

PRODUCT CODE:

PFAC-MXB

LOT NUMBER:

PFACMXB1115

SOLVENT(S):

Methanol / Water (<1%)

DATE PREPARED: (mm/dd/yyyy)

11/04/2015

LAST TESTED: (mm/dd/yyyy)

11/06/2015

EXPIRY DATE: (mm/dd/yyyy)

11/06/2020

RECOMMENDED STORAGE:

Store ampoule in a cool, dark place

DESCRIPTION:

PFAC-MXB is a solution/mixture of thirteen native perfluoroalkylcarboxylic acids (C_4 - C_{14} , C_{16} , and C_{18}) and four native perfluoroalkylsulfonates (C_4 , C_8 , C_8 and C_{10}). The full name, abbreviation and concentration for each of the components are given in Table A.

The individual perfluoroalkylcarboxylic acids and perfluoroalkylsulfonates all have chemical purities of >98%.

DOCUMENTATION/ DATA ATTACHED:

Table A: Components and Concentrations of the Solution/Mixture

Figure 1: LC/MS Data (SIR)

Figure 2: LC/MS/MS Data (Selected MRM Transitions)
Figure 3: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

- See page 2 for further details.
- Contains 4 mole eq. of NaOH to prevent conversion of the carboxylic acids to their respective methyl esters.

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HAZARDS:

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SYNTHESIS / CHARACTERIZATION:

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HOMOGENEITY:

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UNCERTAINTY:

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The combined relative standard uncertainty, $u_{x}(y)$, of a value y and the uncertainty of the independent parameters

$$x_{ij} x_{ij} ... x_{ij}$$
 on which it depends is:

$$u_{\varepsilon}(y(x_1, x_2, ... x_n)) = \sqrt{\sum_{i=1}^{n} u(y, x_i)^2}$$

where x is expressed as a relative standard uncertainty of the individual parameter.

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TRACEABILITY:

All reference standard solutions are traceable to specific crystalline lots. The microbalances used for solution preparation are regularly tested by an external ISO/IEC 17025 accredited calibration company. In addition, their calibration is verified prior to each weighing using NIST and/or NRC traceable external weights. All volumetric glassware used is of Class A tolerance and has been tested according to the appropriate ASTM procedures, which are ultimately traceable to NIST. For certain products, traceability to international interlaboratory studies has also been established.

EXPIRY DATE / PERIOD OF VALIDITY:

Ongoing stability studies of this product have demonstrated stability in its composition and concentration, until the specified expiry date, in the unopened ampoule. Monitoring for any degradation or change in concentration of the listed analyte(s) is performed on a routine basis.

LIMITED WARRANTY:

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QUALITY MANAGEMENT:

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PFACMXB1115 (2 of 6)

Table A: PFAC-MXB; Components and Concentrations (ng/ml, ± 5% in Methanol / Water (<1%))

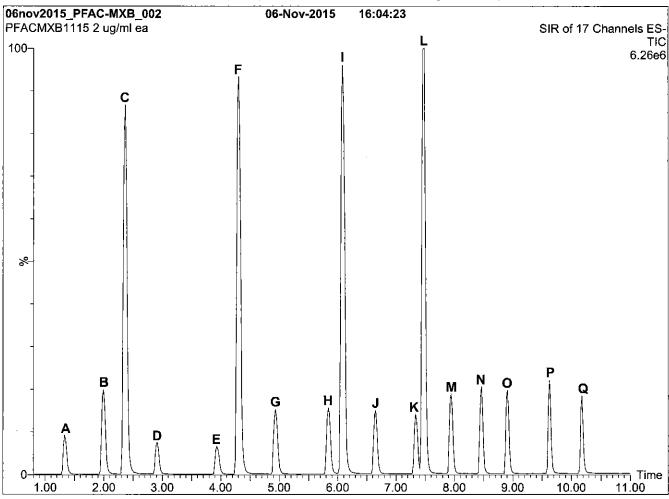
Name	Abbreviation	Concentration (ng/ml)		Peak Assignment In Figure 1
Perfluoro-n-butanoic acid	PFBA	2000		A
Perfluoro-n-pentanoic acid	PFPeA	2000		В
Perfluoro-n-hexanoic acid	PFHxA	2000		D
Perfluoro-n-heptanoic acid	PFHpA	2000		E
Perfluoro-n-octanoic acid	PFOA	2000		G
Perfluoro-n-nonanoic acid	PFNA	2000		н
Perfluoro-n-decanoic acid	PFDA	2000		J
Perfluoro-n-undecanoic acid	PFUdA	2000		К
Perfluoro-n-dodecanoic acid	PFDoA	2000		М
Perfluoro-n-tridecanoic acid	PFTrDA	2000		N
Perfluoro-n-tetradecanoic acid	PFTeDA	2000		0
Perfluoro-n-hexadecanoic acid	PFHxDA	2000		Р
Perfluoro-n-octadecanoic acid	PFODA	2000		Q
Name	Abbreviation	Concentration (ng/ml)		Peak
		as the	as the anion	Assignment in Figure 1
Potassium perfluoro-1-butanesulfonate	L-PFBS	2000	1770	С
Sodium perfluoro-1-hexanesulfonate	L-PFHxS	2000	1890	F
Sodium perfluoro-1-octanesulfonate	L-PFOS	2000	1910	ı
Sodium perfluoro-1-decanesulfonate	L-PFDS	2000	1930	L

Certified By:

B.G. Chittim

Date: <u>11/11/2015</u>

Figure 1: PFAC-MXB; LC/MS Data (Total Ion Current Chromatogram; SIR)



Conditions for Figure 1:

LC: Waters Acquity Ultra Performance LC
MS: Micromass Quattro micro API MS

Chromatographic Conditions

Column:

Acquity UPLC BEH Shield RP 18

1.7 µm, 2.1 x 100 mm

Mobile phase: Gradient

Start: 55% H₂O / 45% (80:20 MeOH:ACN)

(both with 10 mM NH, OAc buffer)

Ramp to 95% organic over 10 min and hold for 1 min

before returning to initial conditions in 0.5 min.

Time: 12 min

Flow:

300 µl/min

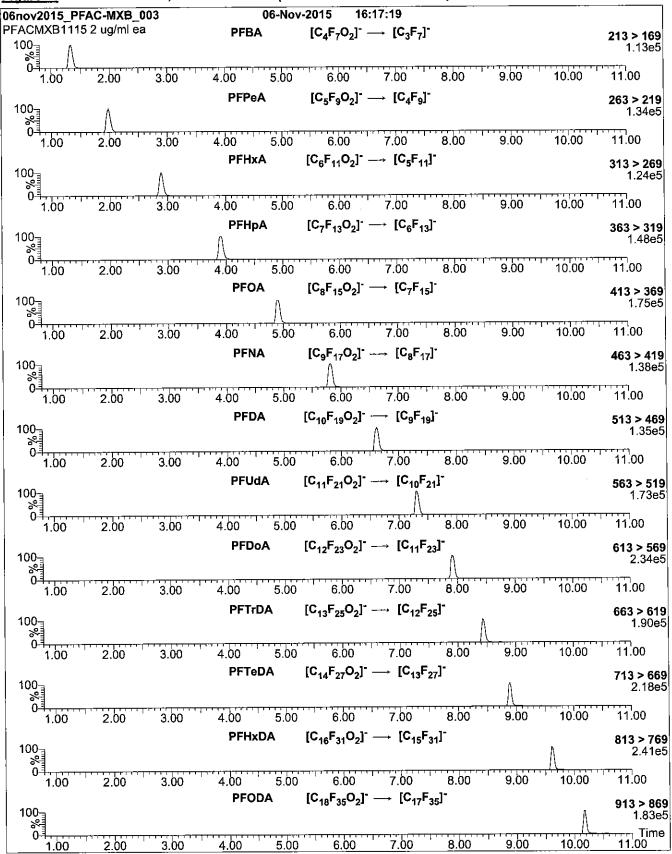
MS Parameters

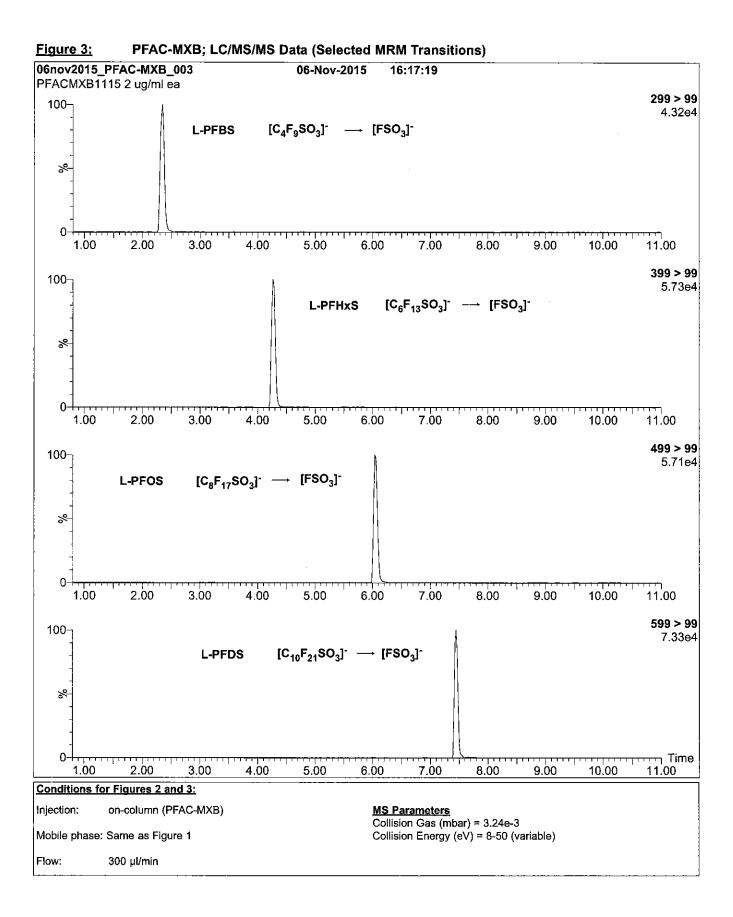
Experiment: SIR of 17 Channels

Source: Electrospray (negative)
Capillary Voltage (kV) = 3.00
Cone Voltage (V) = variable (10-70)
Cone Gas Flow (I/hr) = 50

Desolvation Gas Flow (I/hr) = 750

Figure 2: PFAC-MXB; LC/MS/MS Data (Selected MRM Transitions)





LCPFBA 00006

P:8BC 9/13/16







CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE:

PFBA

LOT NUMBER:

PFBA0516

COMPOUND:

Perfluoro-n-butanoic acid

STRUCTURE:

CAS #:

375-22-4

MOLECULAR FORMULA:

C₄HF₂O₂

CONCENTRATION:

 $50 \pm 2.5 \, \mu g/ml$

MOLECULAR WEIGHT:

214.04

SOLVENT(S):

Methanol Water (<1%)

CHEMICAL PURITY:

>98%

LAST TESTED: (mm/dd/yyyy)

05/27/2016

EXPIRY DATE: (mm/dd/yyyy)

05/27/2021

RECOMMENDED STORAGE:

Store ampoule in a cool, dark place

DOCUMENTATION/ DATA ATTACHED:

Figure 1: LC/MS Data (TIC and Mass Spectrum)

Figure 2: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

See page 2 for further details.

Contains 4 mole eq. of NaOH to prevent conversion of the carboxylic acid to the methyl ester.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By:

Date: 05/31/2016

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LIMITED WARRANTY:

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QUALITY MANAGEMENT

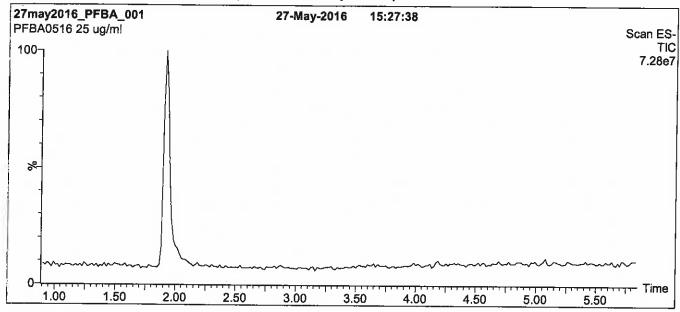
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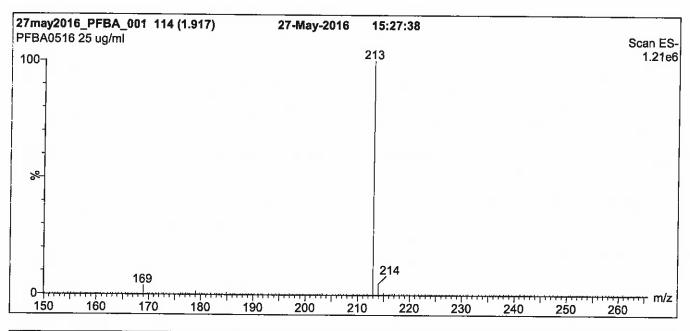


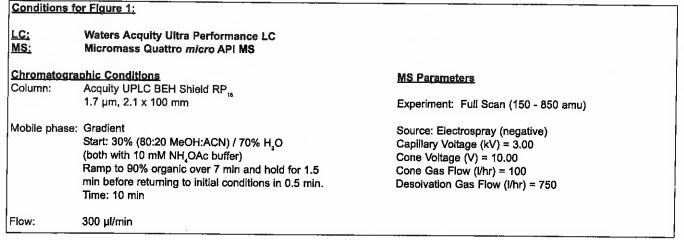


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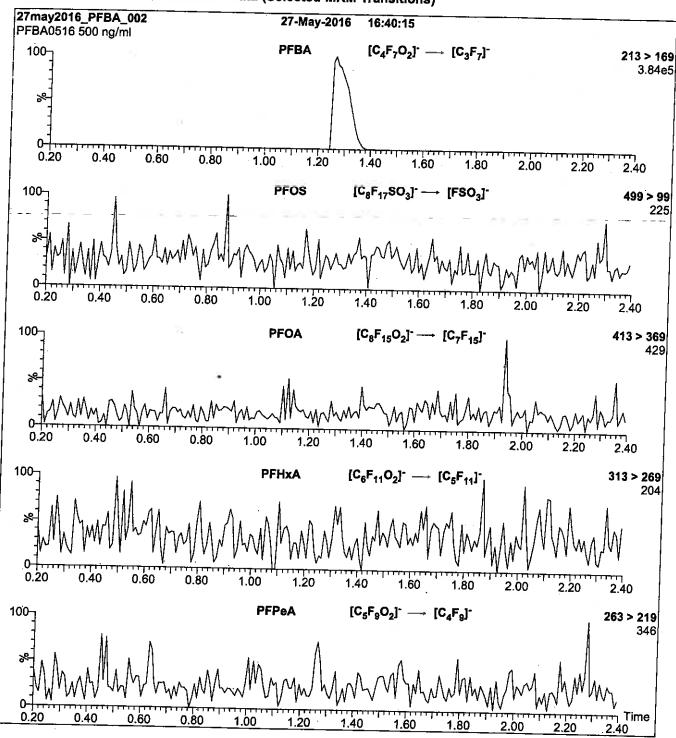
Figure 1: PFBA; LC/MS Data (TIC and Mass Spectrum)

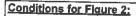






PFBA; LC/MS/MS Data (Selected MRM Transitions) Figure 2:





Injection:

Direct loop injection

10 µl (500 ng/ml PFBA)

Mobile phase: Isocratic 80% (80:20 MeOH:ACN) / 20% H₂O (both with 10 mM NH₄OAc buffer)

Flow: 300 µl/min

MS Parameters

Collision Gas (mbar) = 3.62e-3 Collision Energy (eV) = 10

LCPFBS 00006



ID: LCPFBS_00005 Exp: 03/15/21 Prpd: SBC PF-1-butanesulfonate K sa



ID: LCPFBS_00006 Exp: 03/15/21 Prpd: SBC PF-1-butanesulfonate K sa



VELLINGTON ABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE:

L-PFBS

LOT NUMBER:

LPFBS0316

COMPOUND:

Potassium perfluoro-1-butanesulfonate

CAS #:

29420-49-3

STRUCTURE:

MOLECULAR FORMULA:

C₄F₆SO₅K

MOLECULAR WEIGHT:

338.19

CONCENTRATION:

50.0 ± 2.5 μg/ml (K salt)

 $44.2 \pm 2.2 \mu g/ml$ (PFBS anion)

SOLVENT(S):

Methanol

CHEMICAL PURITY:

>98%

LAST TESTED: (mm/dd/yyyy)

03/15/2016

EXPIRY DATE: (mm/dd/yyyy)

03/15/2021

RECOMMENDED STORAGE:

Store ampoule in a cool, dark place

DOCUMENTATION/ DATA ATTACHED:

Figure 1: LC/MS Data (TIC and Mass Spectrum)

Figure 2: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

See page 2 for further details.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By:

Date: 03/21/2016

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LIMITED WARRANTY:

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QUALITY MANAGEMENT:

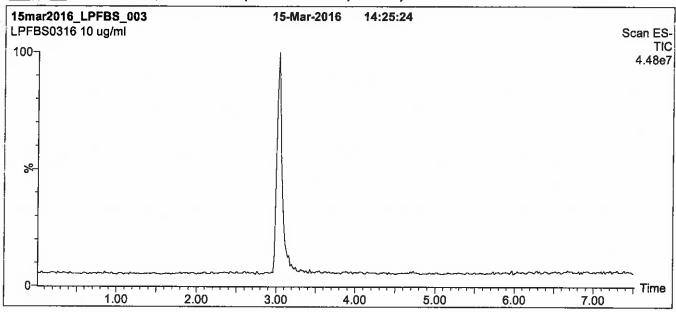
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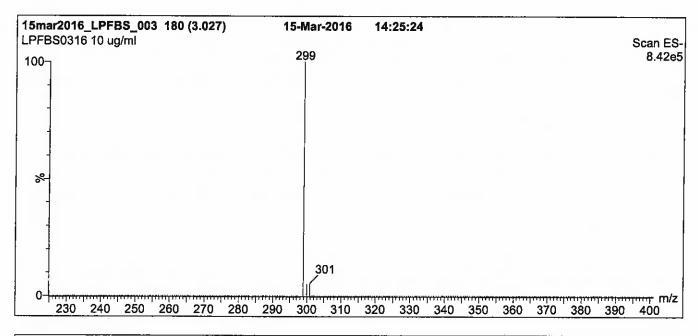


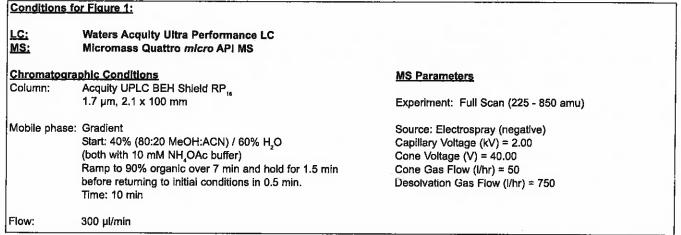


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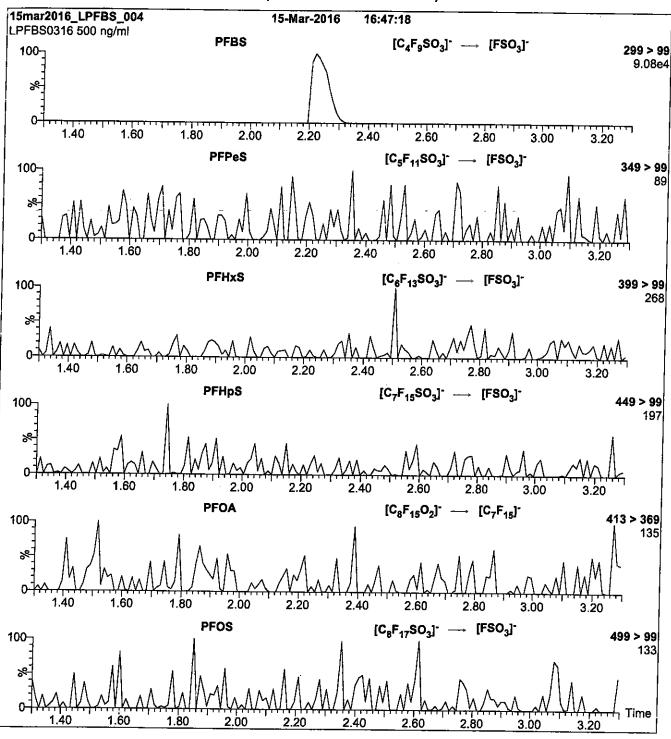
Figure 1: L-PFBS; LC/MS Data (TIC and Mass Spectrum)

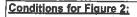






L-PFBS; LC/MS/MS Data (Selected MRM Transitions) Figure 2:





Injection:

Direct loop injection

10 μl (500 ng/ml L-PFBS)

Mobile phase: Isocratic 80% (80:20 MeOH:ACN) / 20% H_aO

(both with 10 mM NH₂OAc buffer)

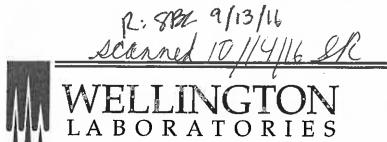
MS Parameters

Collision Gas (mbar) = 3.20e-3 Collision Energy (eV) = 25

Flow:

300 µl/min

LCPFDA 00006



ID: LCPFDA_00007 Exp: 05/31/21 Prpd: SBC

CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE:

PFDA

LOT NUMBER:

PFDA0516

COMPOUND:

STRUCTURE:

Perfluoro-n-decanoic acid

CAS #:

335-76-2

MOLECULAR FORMULA:

C,HF,O,

MOLECULAR WEIGHT:

514.08

CONCENTRATION:

50 ± 2.5 µg/ml

SOLVENT(S):

Methanol

Water (<1%)

CHEMICAL PURITY:

>98%

LAST TESTED: (mm/dd/yyyy)

05/31/2016

EXPIRY DATE: (mrn/ad/yyyy)

05/31/2021

RECOMMENDED STORAGE:

Store ampoule in a cool, dark place

DOCUMENTATION/ DATA ATTACHED:

Figure 1: LC/MS Data (TIC and Mass Spectrum)

Figure 2: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

See page 2 for further details.

Contains 4 mole eq. of NaOH to prevent conversion of the carboxylic acid to the methyl ester.

Contains ~ 0.2% of Perfluoro-n-nonanoic acid (PFNA).

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By:

Date: <u>06/13/2016</u>

Wellington Laboratories Inc., 345 Southgate Dr. Guelph ON N1G 3M5 CANADA 519-822-2436 • Fax: 519-822-2849 • info@well-labs.com

The products prepared by Wellington Laboratories Inc. are for laboratory use only. This certified reference material (CRM) was designed to be used as a standard for the identification and/or quantification of the specific chemical compound it contains.

HAZARDS:

This product should only be used by qualified personnel familiar with its potential hazards and trained in the handling of hazardous chemicals. Due care should be exercised to prevent unnecessary human contact or ingestion. All procedures should be carried out in a well-functioning fume hood and suitable gloves, eye protection, and clothing should be worn at all times. Waste should be disposed of according to national and regional regulations. Safety Data Sheets (SDSs) are available upon request.

SYNTHESIS / CHARACTERIZATION:

Where possible, all of our products are synthesized using single-product unambiguous routes. They are then characterized, and their structures and purities confirmed, using a combination of the most relevant techniques, such as NMR, GC/MS, LC/MS/MS, SFC/UV/MS/MS, x-ray crystallography, and melting point. Isotopic purities of mass-labelled compounds are also confirmed using HRGC/HRMS and/or LC/MS/MS.

HOMOGENEITY:

Prior to solution preparation, crystalline material is tested for homogeneity using a variety of techniques (as stated above) and its solubility in a given diluent is taken into consideration. Duplicate solutions of a new product are prepared from the same crystalline lot and, after the addition of an appropriate internal standard, they are compared by GC/MS, LC/MS/MS and/or SFC/UV/MS/MS. The relative response factors of the analyte of interest in each solution are required to be <5% RSD. New solution lots of existing products are compared to older lots in the same manner, which further confirms the homogeneity of the crystalline material as well as the stability and homogeneity of the solutions in the storage containers.

UNCERTAINTY:

The maximum combined relative standard uncertainty of our reference standard solutions is calculated using the following equation:

The combined relative standard uncertainty, $u_o(y)$, of a value y and the uncertainty of the independent parameters

 $X_1, X_2,...X_n$ on which it depends is:

$$u_c(y(x_1, x_2, ...x_n)) = \sqrt{\sum_{i=1}^n u(y, x_i)^2}$$

where x is expressed as a relative standard uncertainty of the individual parameter.

The individual uncertainties taken into account include those associated with weights (calibration of the balance) and volumes (calibration of the volumetric glassware). An expanded maximum combined percent relative uncertainty of $\pm 5\%$ (calculated with a coverage factor of 2 and a level of confidence of 95%) is stated on the Certificate of Analysis for all of our products.

TRACEABILITY:

All reference standard solutions are traceable to specific crystalline lots. The microbalances used for solution preparation are regularly tested by an external ISO/IEC 17025 accredited calibration company. In addition, their calibration is verified prior to each weighing using NIST and/or NRC traceable external weights. All volumetric glassware used is of Class A tolerance and has been tested according to the appropriate ASTM procedures, which are ultimately traceable to NIST. For certain products, traceability to international interlaboratory studies has also been established.

EXPIRY DATE / PERIOD OF VALIDITY:

Ongoing stability studies of this product have demonstrated stability in its composition and concentration, until the specified expiry date, in the unopened ampoule. Monitoring for any degradation or change in concentration of the listed analyte(s) is performed on a routine basis.

LIMITED WARRANTY:

At the time of shipment, all products are warranted to be free of defects in material and workmanship and to conform to the stated technical and purity specifications.

QUALITY MANAGEMENT:

This product was produced using a Quality Management System registered to the latest versions of ISO 9001 by SAI Global, ISO/IEC 17025 by the Canadian Association for Laboratory Accreditation Inc. (CALA; A 1226), and ISO GUIDE 34 by ANSI-ASQ National Accreditation Board (ANAB; AR-1523).

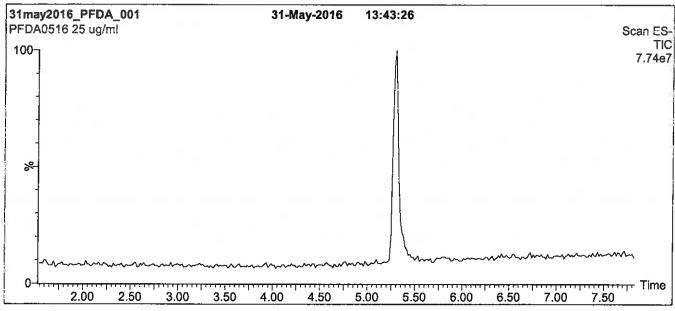


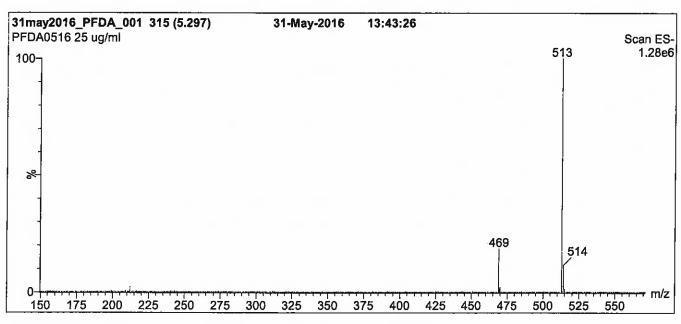


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Figure 1: PFDA; LC/MS Data (TIC and Mass Spectrum)





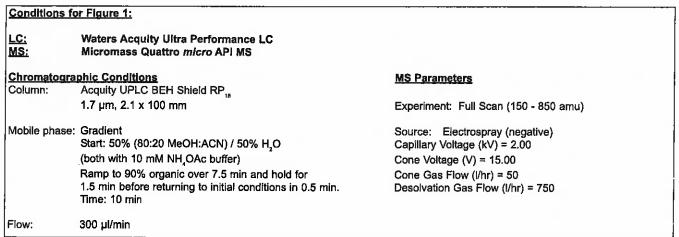
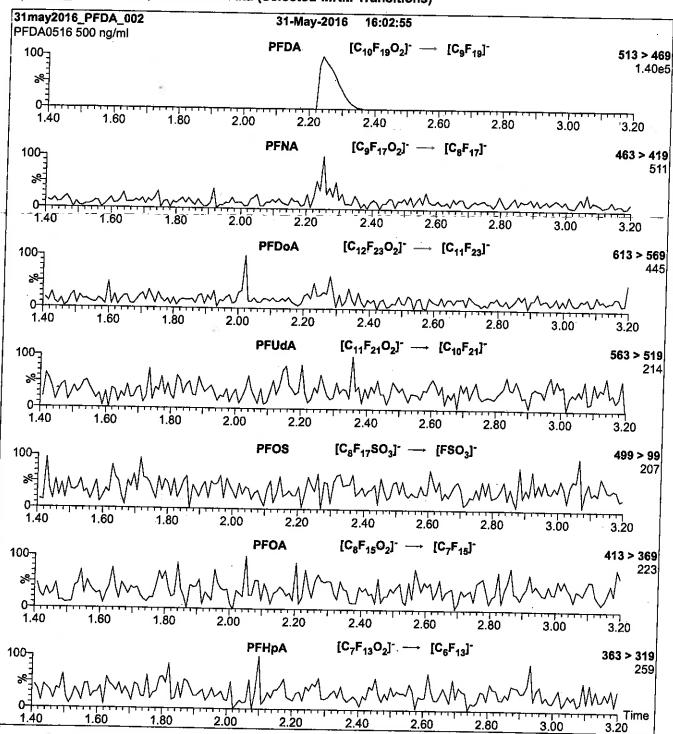


Figure 2; PFDA; LC/MS/MS Data (Selected MRM Transitions)





Injection:

Flow:

Direct loop injection

10 μl (500 ng/ml PFDA)

Mobile phase: Isocratic 80% (80:20 MeOH:ACN) / 20% H_sO

(both with 10 mM NH,OAc buffer)

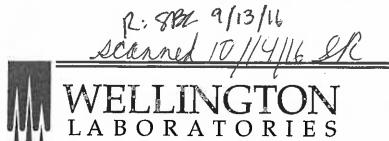
300 µl/min

MS Parameters

Collision Gas (mbar) = 3.39e-3 Collision Energy (eV) = 13

Form#:27, issued 2004-11-10 Revision#:3, Revised 2015-03-24

LCPFDA 00007







CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE:

PFDA

LOT NUMBER:

PFDA0516

COMPOUND:

Perfluoro-n-decanoic acid

STRUCTURE:

CAS #:

335-76-2

MOLECULAR FORMULA:

C,HF,O,

MOLECULAR WEIGHT:

514.08

CONCENTRATION:

50 ± 2.5 µg/ml

SOLVENT(S):

Methanol Water (<1%)

CHEMICAL PURITY:

>98%

LAST TESTED: (mm/dd/yyyy)

05/31/2016

EXPIRY DATE: (mrn/ad/yyyy)

05/31/2021

RECOMMENDED STORAGE:

Store ampoule in a cool, dark place

DOCUMENTATION/ DATA ATTACHED:

Figure 1: LC/MS Data (TIC and Mass Spectrum)

Figure 2: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

- See page 2 for further details.
- Contains 4 mole eq. of NaOH to prevent conversion of the carboxylic acid to the methyl ester.
- Contains ~ 0.2% of Perfluoro-n-nonanoic acid (PFNA).

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By:

Date: <u>06/13/2016</u>

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SYNTHESIS / CHARACTERIZATION:

Where possible, all of our products are synthesized using single-product unambiguous routes. They are then characterized, and their structures and purities confirmed, using a combination of the most relevant techniques, such as NMR, GC/MS, LC/MS/MS, SFC/UV/MS/MS, x-ray crystallography, and melting point. Isotopic purities of mass-labelled compounds are also confirmed using HRGC/HRMS and/or LC/MS/MS.

HOMOGENEITY:

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UNCERTAINTY:

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where x is expressed as a relative standard uncertainty of the individual parameter.

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TRACEABILITY:

All reference standard solutions are traceable to specific crystalline lots. The microbalances used for solution preparation are regularly tested by an external ISO/IEC 17025 accredited calibration company. In addition, their calibration is verified prior to each weighing using NIST and/or NRC traceable external weights. All volumetric glassware used is of Class A tolerance and has been tested according to the appropriate ASTM procedures, which are ultimately traceable to NIST. For certain products, traceability to international interlaboratory studies has also been established.

EXPIRY DATE / PERIOD OF VALIDITY:

Ongoing stability studies of this product have demonstrated stability in its composition and concentration, until the specified expiry date, in the unopened ampoule. Monitoring for any degradation or change in concentration of the listed analyte(s) is performed on a routine basis.

LIMITED WARRANTY:

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QUALITY MANAGEMENT:

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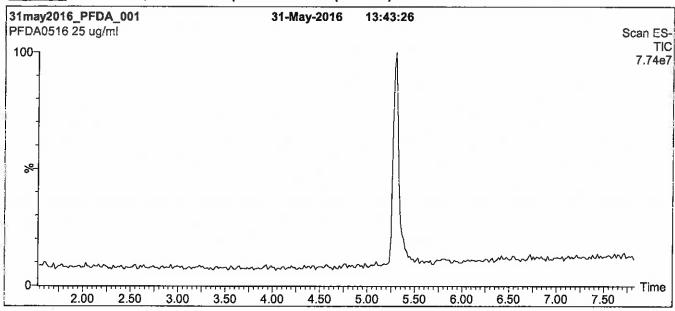


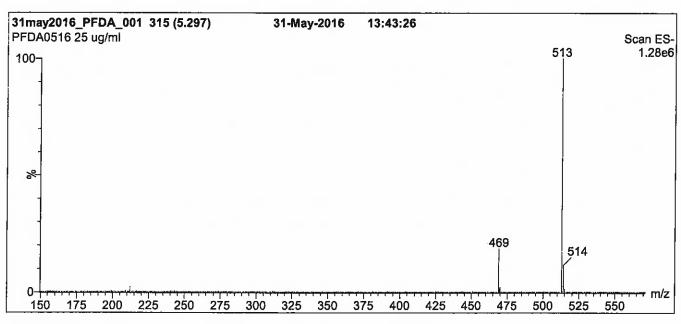


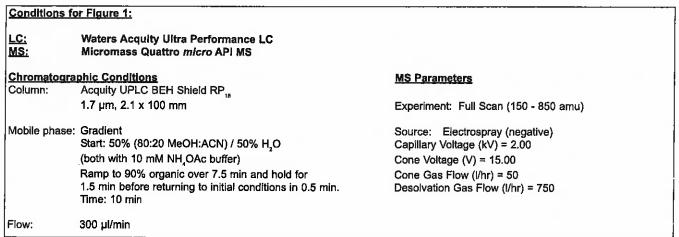
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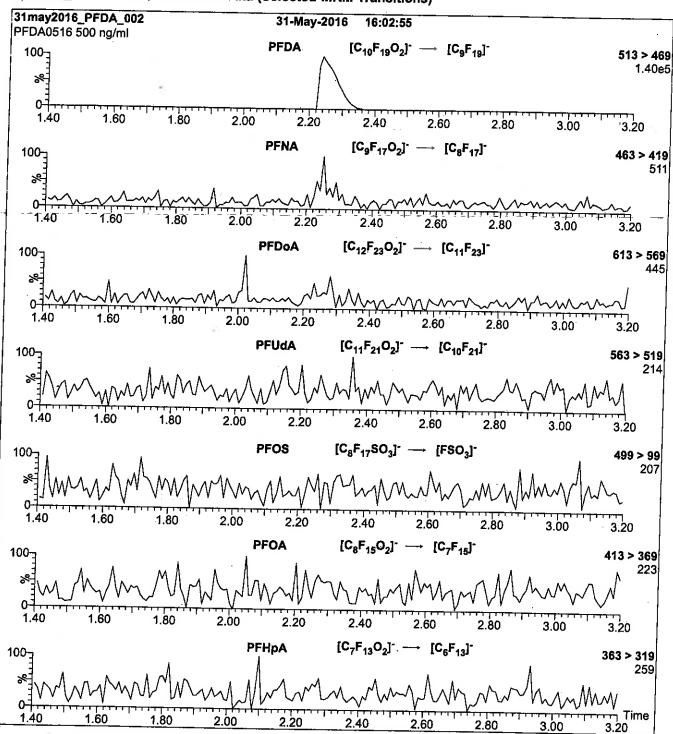
Figure 1: PFDA; LC/MS Data (TIC and Mass Spectrum)







PFDA; LC/MS/MS Data (Selected MRM Transitions) Figure 2:





Injection:

Direct loop injection

10 μl (500 ng/ml PFDA)

(both with 10 mM NH,OAc buffer)

Mobile phase: Isocratic 80% (80:20 MeOH:ACN) / 20% H₂O

Flow:

300 µl/min

MS Parameters

Collision Gas (mbar) = 3.39e-3

Collision Energy (eV) = 13

LCPFDoA_00006



CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE:

PFDoA

LOT NUMBER: PFDoA0516

COMPOUND:

Perfluoro-n-dodecanoic acid

STRUCTURE:

CAS #:

307-55-1

MOLECULAR FORMULA:

C,HF,O,

MOLECULAR WEIGHT:

614,10

CONCENTRATION:

 $50 \pm 2.5 \, \mu g/ml$

SOLVENT(S):

Methanol Water (<1%)

CHEMICAL PURITY:

>98%

LAST TESTED; (mm/dd/yyyy)

05/31/2016

EXPIRY DATE: (mm/dd/yyy)

05/31/2021

RECOMMENDED STORAGE:

Store ampoule in a cool, dark place

DOCUMENTATION/ DATA ATTACHED:

Figure 1: LC/MS Data (TIC and Mass Spectrum)

Figure 2: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

See page 2 for further details.

Contains 4 mole eq. of NaOH to prevent conversion of the carboxylic acid to the methyl ester.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By:

Date: 06/02/2016

Wellington Laboratories Inc., 345 Southgate Dr. Guelph ON N1G 3M5 CANADA 519-822-2436 • Fax: 519-822-2849 • info@well-labs.com

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EXPIRY DATE / PERIOD OF VALIDITY:

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LIMITED WARRANTY:

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QUALITY MANAGEMENT:

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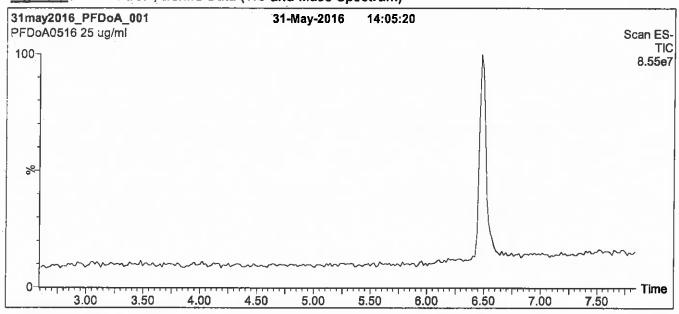


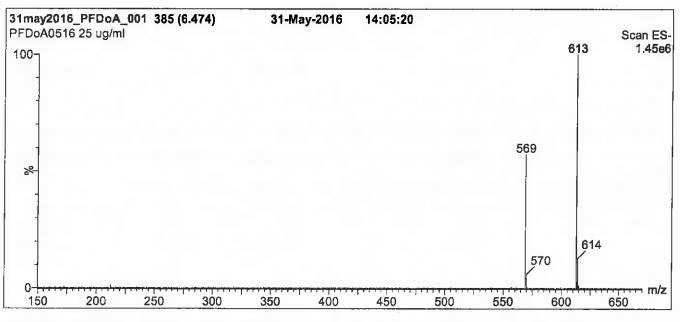


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Figure 1: PFDoA; LC/MS Data (TIC and Mass Spectrum)

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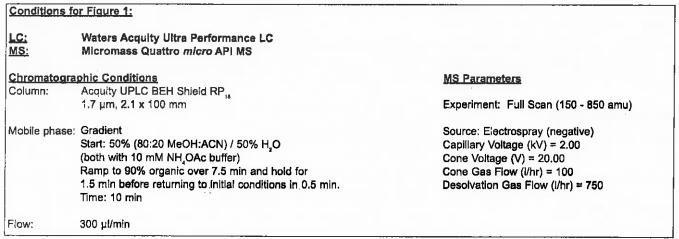
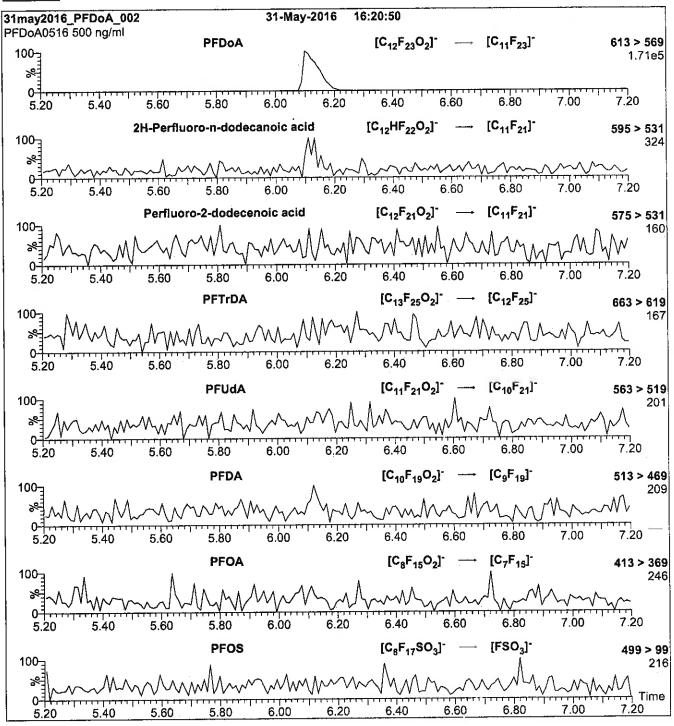
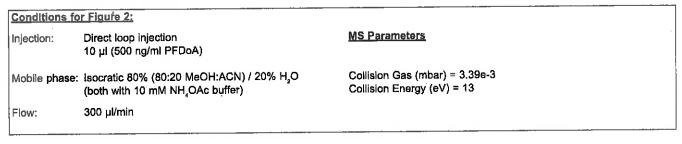


Figure 2: PFDoA; LC/MS/MS Data (Selected MRM Transitions)





LCPFDoA_00007



CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE:

PFDoA

LOT NUMBER: PFDoA0516

COMPOUND:

Perfluoro-n-dodecanoic acid

STRUCTURE:

CAS #:

307-55-1

MOLECULAR FORMULA:

C,HF,O,

MOLECULAR WEIGHT:

614,10

CONCENTRATION:

 $50 \pm 2.5 \, \mu g/ml$

SOLVENT(S):

Methanol Water (<1%)

CHEMICAL PURITY:

>98%

LAST TESTED; (mm/dd/yyyy)

05/31/2016

EXPIRY DATE: (mm/dd/yyy)

05/31/2021

RECOMMENDED STORAGE:

Store ampoule in a cool, dark place

DOCUMENTATION/ DATA ATTACHED:

Figure 1: LC/MS Data (TIC and Mass Spectrum)

Figure 2: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

See page 2 for further details.

Contains 4 mole eq. of NaOH to prevent conversion of the carboxylic acid to the methyl ester.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By:

Date: 06/02/2016

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HAZARDS:

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HOMOGENEITY:

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UNCERTAINTY:

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where x is expressed as a relative standard uncertainty of the individual parameter.

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EXPIRY DATE / PERIOD OF VALIDITY:

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QUALITY MANAGEMENT:

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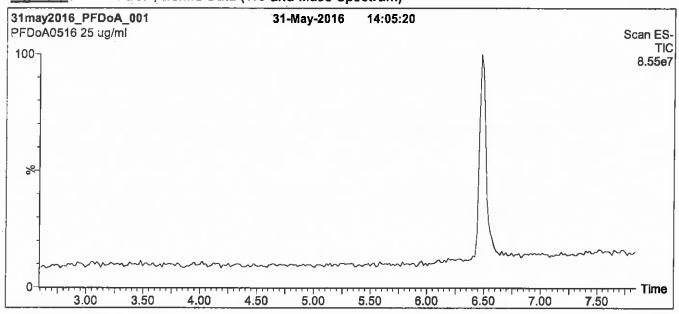


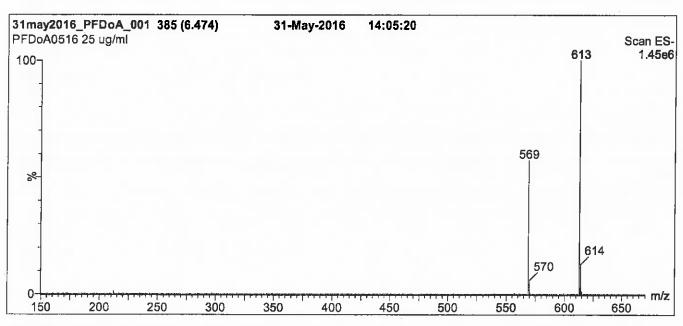


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Figure 1: PFDoA; LC/MS Data (TIC and Mass Spectrum)

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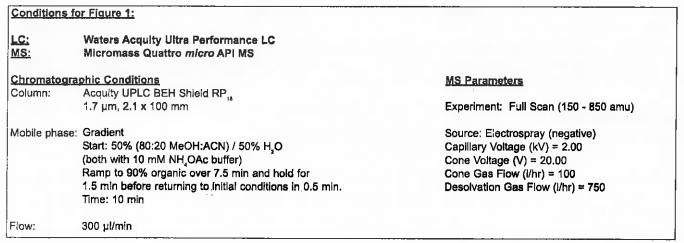
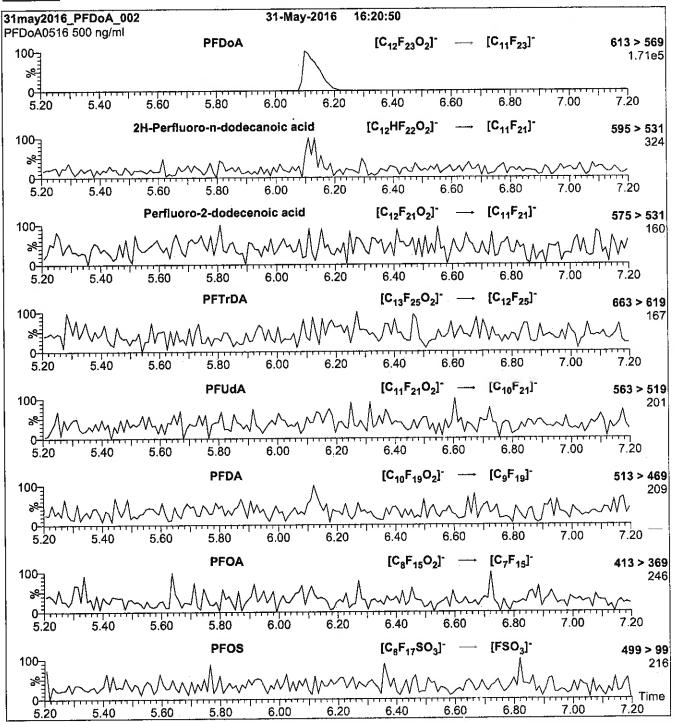
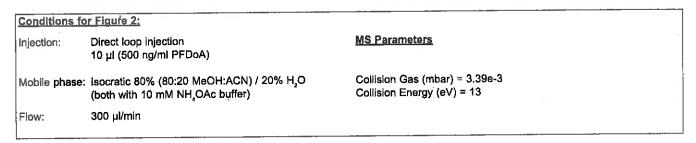


Figure 2: PFDoA; LC/MS/MS Data (Selected MRM Transitions)





LCPFDS 00005

ID: LCPFDS_00005 Exp: 07/02/20 Prpd; CBW PF-1-decanesulfonate sodi Rec. 3/29/14 JRB



CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE:

L-PFDS

LOT NUMBER:

LPFDS0615

COMPOUND:

Sodium perfluoro-1-decanesulfonate

STRUCTURE:

CAS #:

2806-15-7

MOLECULAR FORMULA:

C₁₀F₂₁SO₃Na

MOLECULAR WEIGHT:

622,13

CONCENTRATION:

 $50.0 \pm 2.5 \,\mu g/ml$ (Na salt)

 $48.2 \pm 2.4 \mu g/ml$ (PFDS anion)

SOLVENT(S):

Methanol

CHEMICAL PURITY:

>98%

LAST TESTED: (mm/dd/yyyy)

07/02/2015

EXPIRY DATE: (mm/dd/yyyy)

07/02/2020

RECOMMENDED STORAGE:

Store ampoule in a cool, dark place

DOCUMENTATION/ DATA ATTACHED:

Figure 1: LC/MS Data (TIC and Mass Spectrum)

Figure 2: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

See page 2 for further details.

Contains ~ 0.9% of sodium perfluoro-1-dodecanesulfonate (L-PFDoS).

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By:

Date: 12/07/2015

Wellington Laboratories Inc., 345 Southgate Dr. Guelph ON N1G 3M5 CANADA 519-822-2436 • Fax: 519-822-2849 • info@well-labs.com

The products prepared by Wellington Laboratories Inc. are for laboratory use only. This certified reference material (CRM) was designed to be used as a standard for the identification and/or quantification of the specific chemical compound it contains.

HAZARDS:

This product should only be used by qualified personnel familiar with its potential hazards and trained in the handling of hazardous chemicals. Due care should be exercised to prevent unnecessary human contact or ingestion. All procedures should be carried out in a well-functioning fume hood and suitable gloves, eye protection, and clothing should be worn at all times. Waste should be disposed of according to national and regional regulations. Safety Data Sheets (SDSs) are available upon request.

SYNTHESIS / CHARACTERIZATION:

Where possible, all of our products are synthesized using single-product unambiguous routes. They are then characterized, and their structures and purities confirmed, using a combination of the most relevant techniques, such as NMR, GC/MS, LC/MS/MS, SFC/UV/MS/MS, x-ray crystallography, and melting point. Isotopic purities of mass-labelled compounds are also confirmed using HRGC/HRMS and/or LC/MS/MS.

HOMOGENEITY:

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 $x_4, x_2,...x_n$ on which it depends is:

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where x is expressed as a relative standard uncertainty of the individual parameter.

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EXPIRY DATE / PERIOD OF VALIDITY:

Ongoing stability studies of this product have demonstrated stability in its composition and concentration, until the specified expiry date, in the unopened ampoule. Monitoring for any degradation or change in concentration of the listed analyte(s) is performed on a routine basis.

LIMITED WARRANTY:

At the time of shipment, all products are warranted to be free of defects in material and workmanship and to conform to the stated technical and purity specifications.

QUALITY MANAGEMENT:

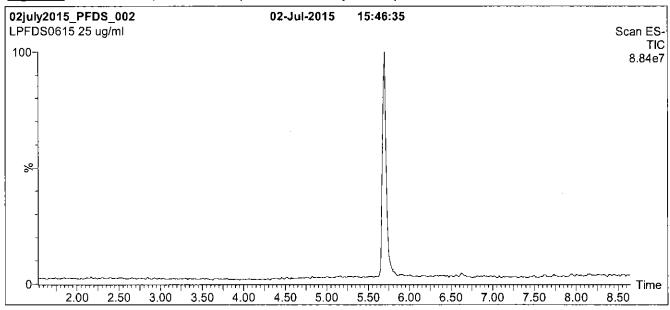
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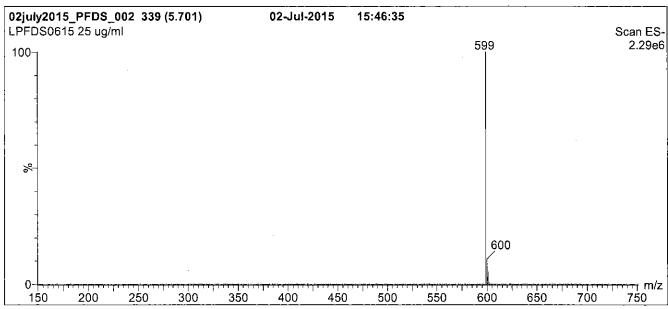




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Figure 1: L-PFDS; LC/MS Data (TIC and Mass Spectrum)





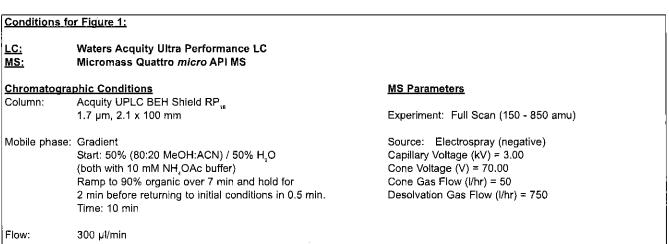
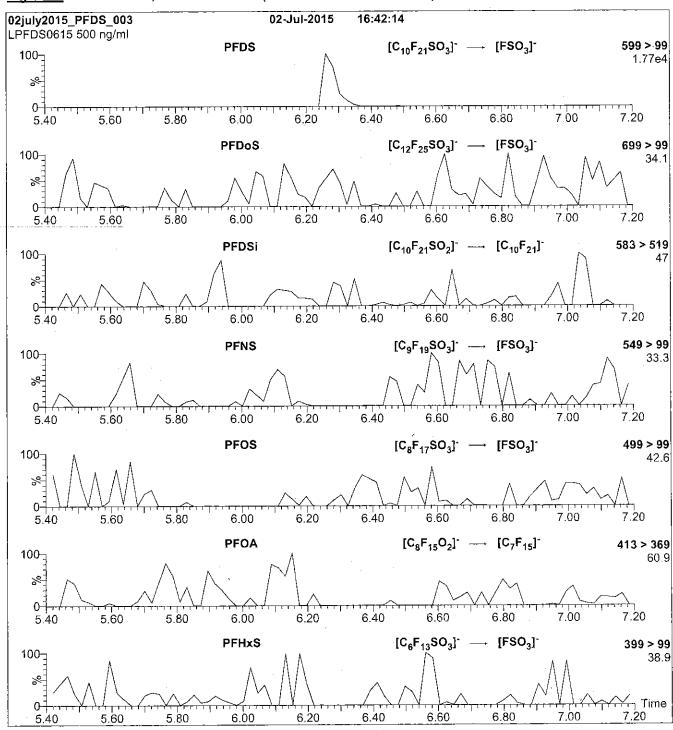
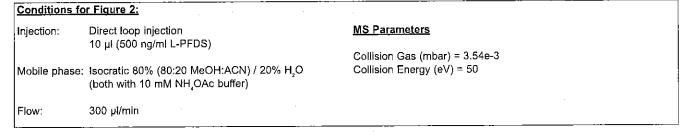
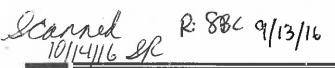


Figure 2: L-PFDS; LC/MS/MS Data (Selected MRM Transitions)





LCPFDS_00007





ID: LCPFDS_00006 Exp: 05/24/21 Prpd: SBC PF-1-decanesulfonate sodi



730550

ID: LCPFDS_00007 Exp: 05/24/24 Prpd: SBC PF-1-decanesulfonate sodi



CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE:

L-PFDS

LOT NUMBER:

LPFDS0516

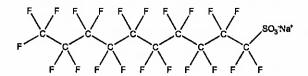
COMPOUND:

Sodium perfluoro-1-decanesulfonate

STRUCTURE:

CAS#:

2806-15-7



MOLECULAR FORMULA:

C₁₀F₂₁SO₃Na

MOLECULAR WEIGHT:

622,13

CONCENTRATION:

 $50.0 \pm 2.5 \,\mu g/ml$ (Na salt)

 $48.2 \pm 2.4 \mu g/ml$ (PFDS anion)

SOLVENT(S):

Methanol

CHEMICAL PURITY:

>98%

LAST TESTED: (mm/dd/yyyy)

05/24/2016

EXPIRY DATE: (mm/dd/yyyy)

05/24/2021

RECOMMENDED STORAGE:

Store ampoule in a cool, dark place

DOCUMENTATION/ DATA ATTACHED:

Figure 1: LC/MS Data (TIC and Mass Spectrum)

Figure 2: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

See page 2 for further details.

Contains ~ 0.9% of sodium perfluoro-1-dodecanesulfonate (L-PFDoS).

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By:

B.G. Chittim

Date:

<u>05/26/2016</u>

Wellington Laboratories Inc., 345 Southgate Dr. Guelph ON N1G 3M5 CANADA 519-822-2436 • Fax: 519-822-2849 • info@well-labs.com

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UNCERTAINTY:

The maximum combined relative standard uncertainty of our reference standard solutions is calculated using the following

The combined relative standard uncertainty, $u_{o}(y)$, of a value y and the uncertainty of the independent parameters

x,, x,...x, on which it depends is:

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EXPIRY DATE / PERIOD OF VALIDITY:

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LIMITED WARRANTY:

At the time of shipment, all products are warranted to be free of defects in material and workmanship and to conform to the stated technical and purity specifications.

QUALITY MANAGEMENT:

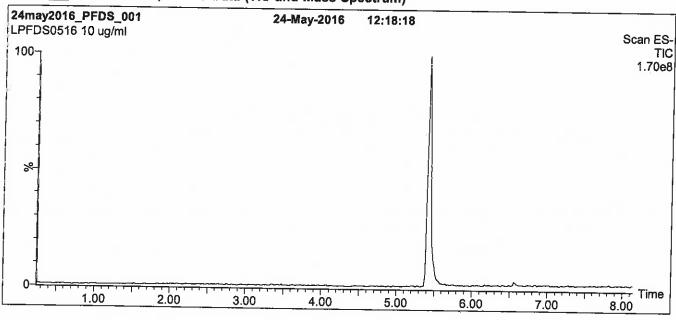
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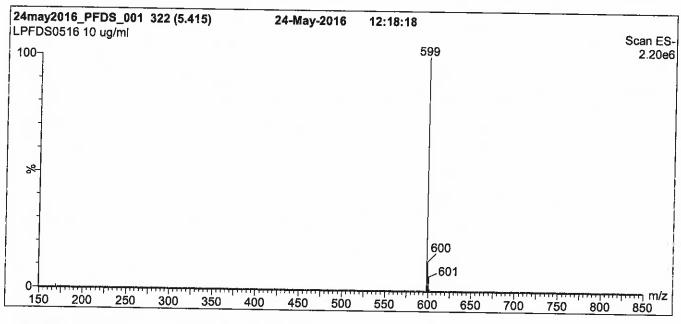




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Figure 1: L-PFDS; LC/MS Data (TIC and Mass Spectrum)





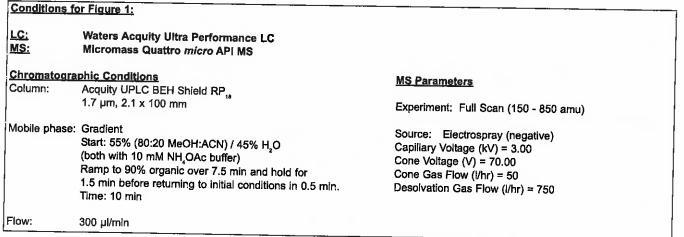
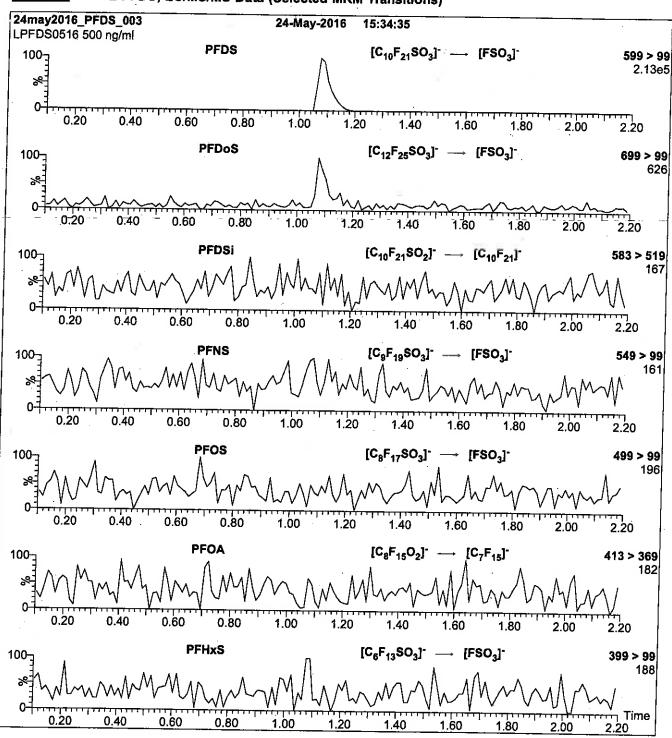
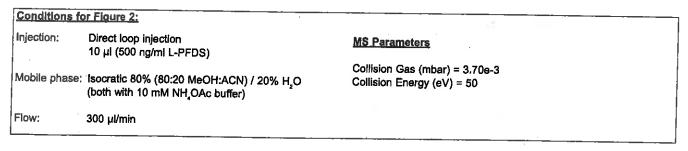
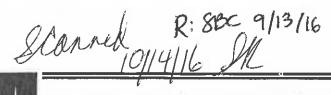


Figure 2: L-PFDS; LC/MS/MS Data (Selected MRM Transitions)





LCPFHpA_00006



ID: LCPFHpA_00006 Exp: 01/22/21 Prpd: SBC PF-n-heptanoic acid

ID: LCPFHpA_00007 Exp: 01/22/21 Prpd: SBC PF-n-heptanoic acid



BORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE:

PFHpA

LOT NUMBER:

PFHpA0116

COMPOUND:

Perfluoro-n-heptanoic acid

STRUCTURE:

CAS #:

375-85-9

MOLECULAR FORMULA:

C,HF,O,

CONCENTRATION:

50 ± 2.5 µg/ml

MOLECULAR WEIGHT:

364.06

SOLVENT(S):

Methanol Water (<1%)

CHEMICAL PURITY:

>98%

LAST TESTED: (mm/dd/yyyy)

01/22/2016

EXPIRY DATE: (mm/dd/yyyy)

01/22/2021

RECOMMENDED STORAGE:

Store ampoule in a cool, dark place

DOCUMENTATION/ DATA ATTACHED:

Figure 1: LC/MS Data (TIC and Mass Spectrum)

Figure 2: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

See page 2 for further details.

Contains 4 mole eq. of NaOH to prevent conversion of the carboxylic acid to the methyl ester.

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Certified By:

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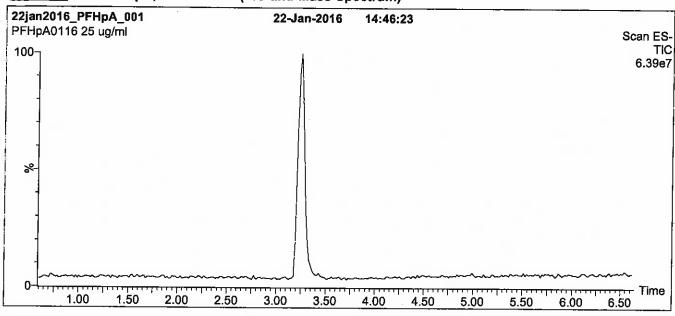
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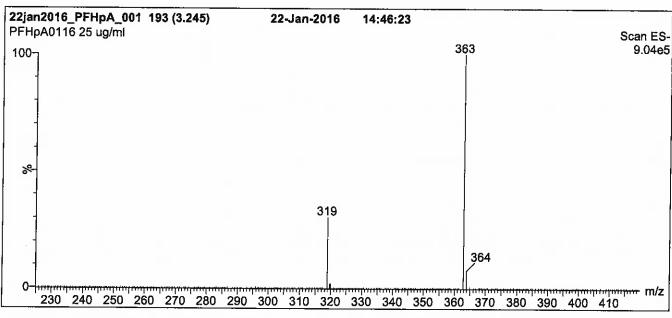


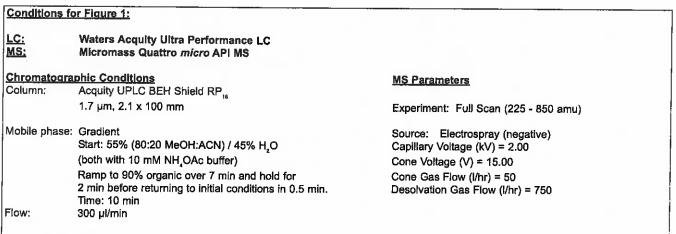


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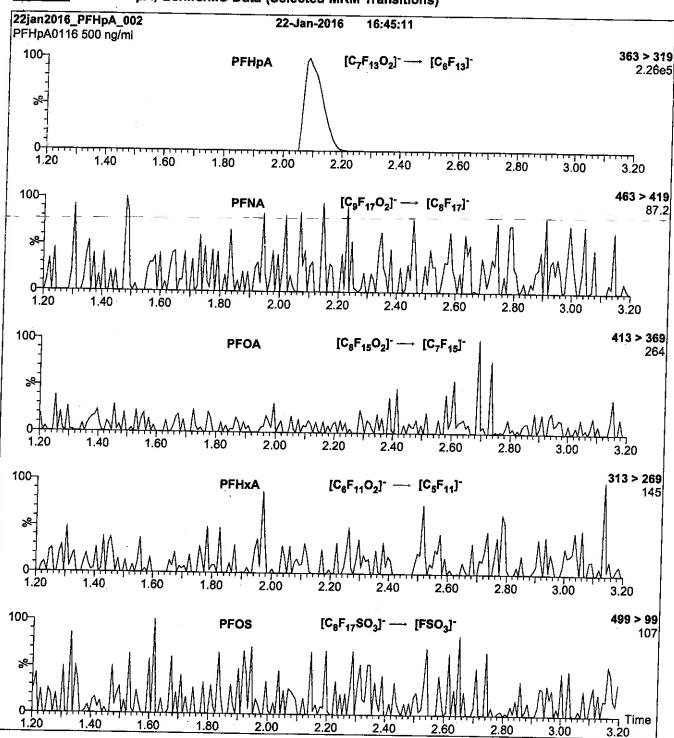
Figure 1: PFHpA; LC/MS Data (TIC and Mass Spectrum)







PFHpA; LC/MS/MS Data (Selected MRM Transitions) Figure 2:





Injection:

Direct loop injection

10 µl (500 ng/ml PFHpA)

Mobile phase: Isocratic 80% (80:20 MeOH:ACN) / 20% H₂O

(both with 10 mM NH₄OAc buffer)

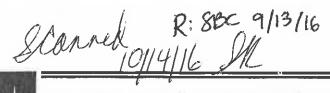
Flow:

300 µl/min

MS Parameters

Collision Gas (mbar) = 3.50e-3 Collision Energy (eV) = 11

LCPFHpA_00007



ID: LCPFHpA_00006 Exp: 01/22/21 Prpd: SBC PF-n-heptanoic acid

ID: LCPFHpA_00007 Exp: 01/22/21 Prpd: SBC PF-n-heptanoic acid



CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE:

PFHpA

LOT NUMBER:

PFHpA0116

COMPOUND:

Perfluoro-n-heptanoic acid

STRUCTURE:

CAS #:

375-85-9

MOLECULAR FORMULA:

C,HF,O,

CONCENTRATION:

50 ± 2.5 µg/ml

MOLECULAR WEIGHT:

364.06

SOLVENT(S):

Methanol Water (<1%)

CHEMICAL PURITY:

>98%

LAST TESTED: (mm/dd/yyyy)

01/22/2016

EXPIRY DATE: (mm/dd/yyyy)

01/22/2021

RECOMMENDED STORAGE:

Store ampoule in a cool, dark place

DOCUMENTATION/ DATA ATTACHED:

Figure 1: LC/MS Data (TIC and Mass Spectrum)

Figure 2: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

See page 2 for further details.

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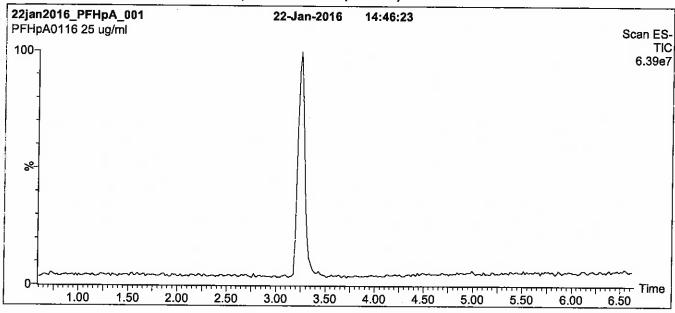
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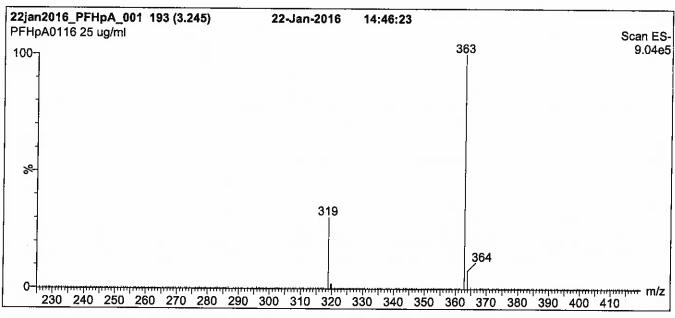


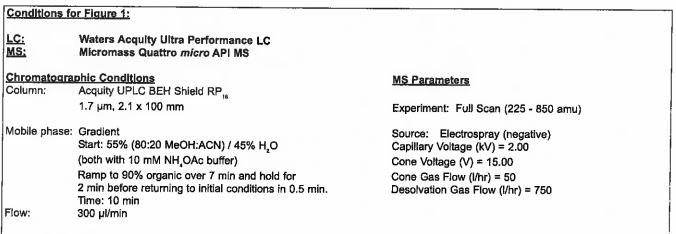


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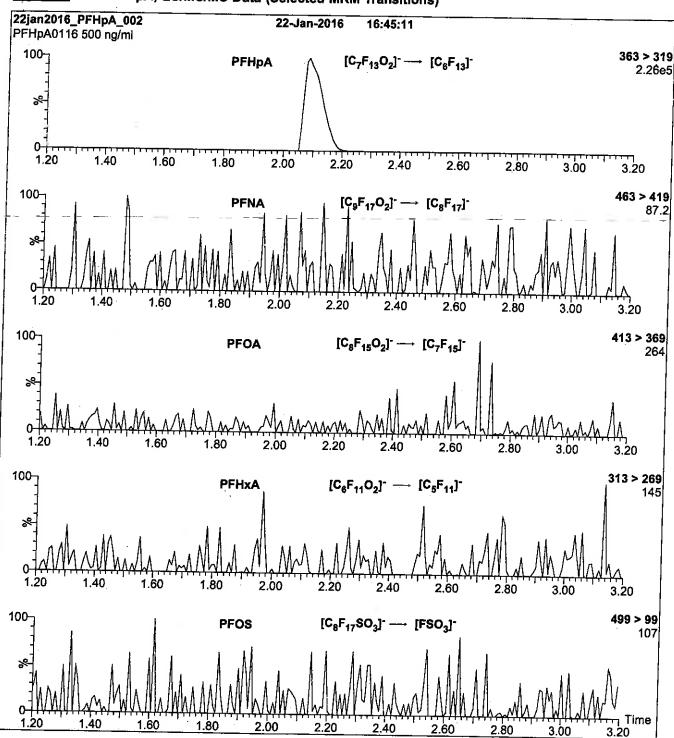
Figure 1: PFHpA; LC/MS Data (TIC and Mass Spectrum)

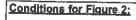






PFHpA; LC/MS/MS Data (Selected MRM Transitions) Figure 2:





Injection:

Direct loop injection

10 µl (500 ng/ml PFHpA)

Mobile phase: Isocratic 80% (80:20 MeOH:ACN) / 20% H₂O

(both with 10 mM NH₄OAc buffer)

MS Parameters

Collision Gas (mbar) = 3.50e-3 Collision Energy (eV) = 11

300 µl/min

LCPFHpS_00010

Scarred R: 8BC 9/13/16





WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE:

L-PFHpS

LOT NUMBER:

LPFHpS1115

COMPOUND:

Sodium perfluoro-1-heptanesulfonate

STRUCTURE:

CAS #:

Not available

MOLECULAR FORMULA:

C₇F₁₅SO₃Na

MOLECULAR WEIGHT:

472.10

CONCENTRATION:

 $50.0 \pm 2.5 \,\mu g/ml$ (Na salt)

SOLVENT(S):

Methanol

CHEMICAL PURITY:

>98%

LAST TESTED: (m:m/dd/yyyy)

11/06/2015

EXPIRY DATE: (mm/dd/yyyy)

11/06/2020

RECOMMENDED STORAGE:

Store ampoule in a cool, dark place

47.6 ± 2.4 µg/ml (PFHpS anion)

DOCUMENTATION/ DATA ATTACHED:

Figure 1: LC/MS Data (TIC and Mass Spectrum)

Figure 2: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

See page 2 for further details.

Contains ~ 0.1% of L-PFHxS (C_xF₁₃SO₃Na) and ~ 0.2% of L-PFOS (C_xF₁₃SO₃Na).

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By:

B.C. Chiftim

Date:

11/09/2015

(mm/dd/yyyy)

The products prepared by Wellington Laboratories Inc. are for laboratory use only. This certified reference material (CRM) was designed to be used as a standard for the identification and/or quantification of the specific chemical compound it contains.

HAZARDS:

This product should only be used by qualified personnel familiar with its potential hazards and trained in the handling of hazardous chemicals. Due care should be exercised to prevent unnecessary human contact or ingestion. All procedures should be carried out in a well-functioning fume hood and suitable gloves, eye protection, and clothing should be worn at all times. Waste should be disposed of according to national and regional regulations. Safety Data Sheets (SDSs) are available upon request,

SYNTHESIS / CHARACTERIZATION:

Where possible, all of our products are synthesized using single-product unambiguous routes. They are then characterized, and their structures and purities confirmed, using a combination of the most relevant techniques, such as NMR, GC/MS, LC/MS/MS, SFC/UV/MS/MS, x-ray crystallography, and melting point. Isotopic purities of mass-labelled compounds are also confirmed using HRGC/HRMS and/or LC/MS/MS.

HOMOGENEITY:

Prior to solution preparation, crystalline material is tested for homogeneity using a variety of techniques (as stated above) and its solubility in a given diluent is taken into consideration. Duplicate solutions of a new product are prepared from the same crystalline lot and, after the addition of an appropriate internal standard, they are compared by GC/MS, LC/MS/MS and/or SFC/UV/MS/MS. The relative response factors of the analyte of interest in each solution are required to be <5% RSD. New solution lots of existing products are compared to older lots in the same manner, which further confirms the homogeneity of the crystalline material as well as the stability and homogeneity of the solutions in the storage containers.

UNCERTAINTY:

The maximum combined relative standard uncertainty of our reference standard solutions is calculated using the following equation:

The combined relative standard uncertainty, $u_c(y)$, of a value y and the uncertainty of the independent parameters

 $X_1, X_2, ... X_n$ on which it depends is:

$$u_c(y(x_1, x_2, ...x_n)) = \sqrt{\sum_{i=1}^n u(y, x_i)^2}$$

where x is expressed as a relative standard uncertainty of the individual parameter.

The individual uncertainties taken into account include those associated with weights (calibration of the balance) and volumes (calibration of the volumetric glassware). An expanded maximum combined percent relative uncertainty of $\pm 5\%$ (calculated with a coverage factor of 2 and a level of confidence of 95%) is stated on the Certificate of Analysis for all of our products.

TRACEABILITY:

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EXPIRY DATE / PERIOD OF VALIDITY:

Ongoing stability studies of this product have demonstrated stability in its composition and concentration, until the specified expiry date, in the unopened ampoule. Monitoring for any degradation or change in concentration of the listed analyte(s) is performed on a routine basis.

LIMITED WARRANTY:

At the time of shipment, all products are warranted to be free of defects in material and workmanship and to conform to the stated technical and purity specifications.

QUALITY MANAGEMENT:

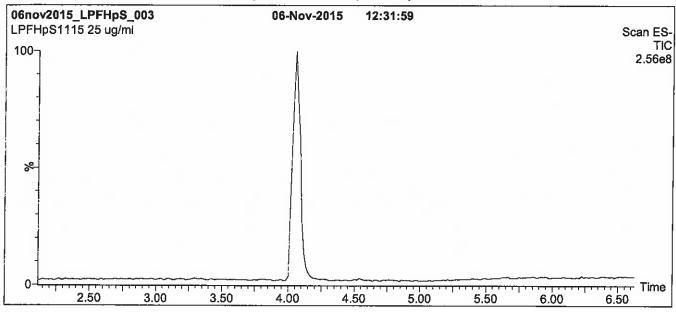
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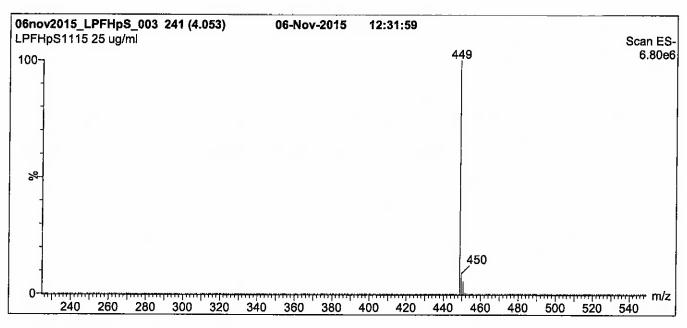




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Figure 1: L-PFHpS; LC/MS Data (TIC and Mass Spectrum)





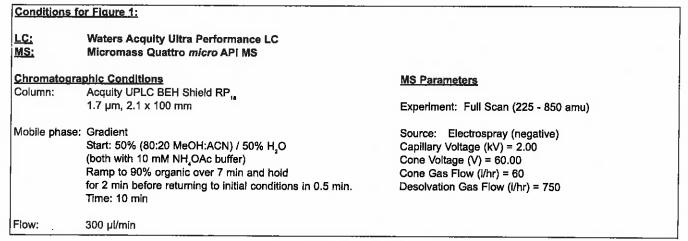
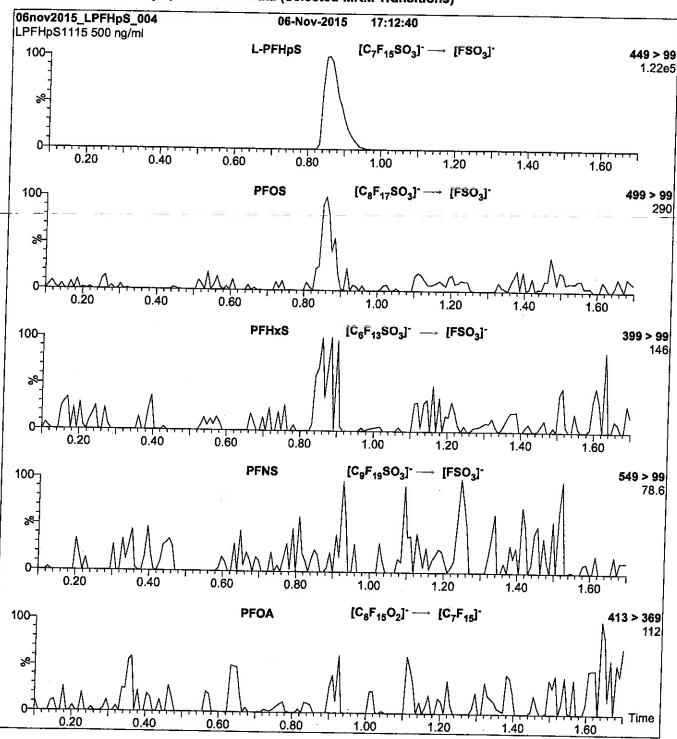
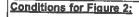


Figure 2: L-PFHpS; LC/MS/MS Data (Selected MRM Transitions)





Injection:

Direct loop injection

10 μl (500 ng/ml L-PFHpS)

Mobile phase: Isocratic 80% (80:20 MeOH:ACN) / 20% H₂O (both with 10 mM NH₂OAc buffer)

MS Parameters

Collision Gas (mbar) = 3.31e-3 Collision Energy (eV) = 35

Flow:

300 µl/min

LCPFHxA_00005

R: 8Be 9/13/16



iD: LCPFHxA_00005 Exp: 12/22/20 Prpd; SBC PF-n-hexanoic acid



ID: LCPFHxA_00006 Exp: 12/22/20 Prpd: SBC PF-n-hexanoic acid



CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE:

PFHxA

LOT NUMBER:

PFHxA1215

COMPOUND:

Perfluoro-n-hexanoic acid

STRUCTURE:

CAS #:

307-24-4

MOLECULAR FORMULA:

C,HF,O,

CONCENTRATION:

 $50 \pm 2.5 \, \mu g/ml$

MOLECULAR WEIGHT:

314.05

SOLVENT(S):

Methanol

Water (<1%)

CHEMICAL PURITY:

>98%

LAST TESTED: (mm/dd/yyyr)

12/22/2015

EXPIRY DATE: (mm/dd/yyyy)

12/22/2020

RECOMMENDED STORAGE:

Store ampoule in a cool, dark place

DOCUMENTATION/ DATA ATTACHED:

Figure 1: LC/MS Data (TIC and Mass Spectrum)

Figure 2: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

See page 2 for further details.

Contains 4 mole eq. of NaOH to prevent conversion of the carboxylic acid to the methyl ester.

Contains ~ 0.2% of Perfluoro-n-pentanoic acid (PFPeA).

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By:

Date: 12/23/2015

Wellington Laboratories Inc., 345 Southgate Dr. Guelph ON N1G 3M5 CANADA 519-822-2436 • Fax: 519-822-2849 • info@well-labs.com

The products prepared by Wellington Laboratories Inc. are for laboratory use only. This certified reference material (CRM) was designed to be used as a standard for the identification and/or quantification of the specific chemical compound it contains.

HAZARDS:

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EXPIRY DATE / PERIOD OF VALIDITY:

Ongoing stability studies of this product have demonstrated stability in its composition and concentration, until the specified expiry date, in the unopened ampoule. Monitoring for any degradation or change in concentration of the listed analyte(s) is performed on a routine basis.

LIMITED WARRANTY:

At the time of shipment, all products are warranted to be free of defects in material and workmanship and to conform to the stated technical and purity specifications.

QUALITY MANAGEMENT:

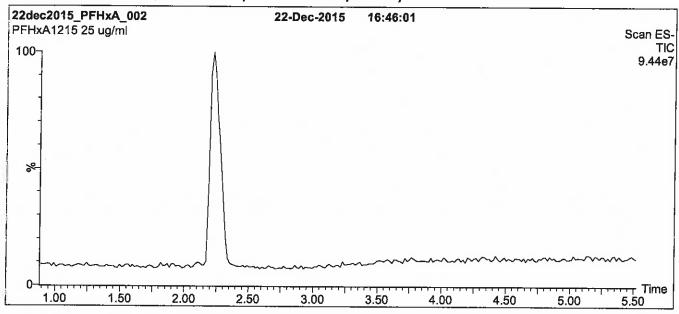
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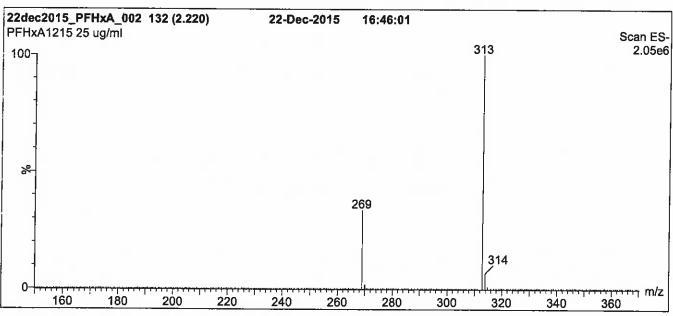




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Figure 1: PFHxA; LC/MS Data (TIC and Mass Spectrum)





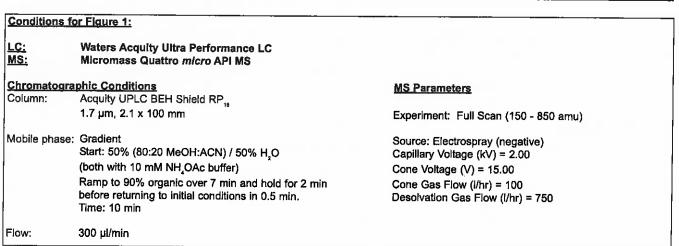
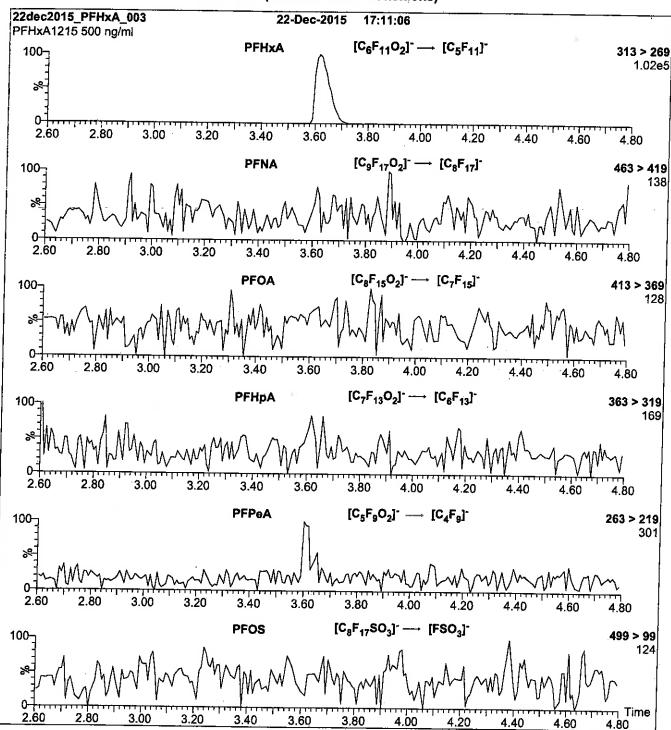
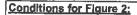


Figure 2: PFHxA; LC/MS/MS Data (Selected MRM Transitions)





Injection:

Direct loop injection

Mobile phase: Isocratic 80% (80:20 MeOH:ACN) / 20% H_aO

(both with 10 mM NH,OAc buffer)

10 μl (500 ng/ml PFHxA)

MS Parameters

Collision Gas (mbar) = 3,43e-3 Collision Energy (eV) = 10

Flow:

300 µl/min

LCPFHxA_00006

R: 8Be 9/13/16



iD: LCPFHxA_00005 Exp: 12/22/20 Prpd; SBC PF-n-hexanoic acid



ID: LCPFHxA_00006 Exp: 12/22/20 Prpd: SBC PF-n-hexanoic acid



CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE:

PFHxA

LOT NUMBER:

PFHxA1215

COMPOUND:

Perfluoro-n-hexanoic acid

STRUCTURE:

CAS #:

307-24-4

MOLECULAR FORMULA:

C,HF,O,

CONCENTRATION:

 $50 \pm 2.5 \, \mu g/ml$

MOLECULAR WEIGHT:

314.05

SOLVENT(S):

Methanol

Water (<1%)

CHEMICAL PURITY:

>98%

LAST TESTED: (mm/dd/yyyr)

12/22/2015

EXPIRY DATE: (mm/dd/yyyy)

12/22/2020

RECOMMENDED STORAGE:

Store ampoule in a cool, dark place

DOCUMENTATION/ DATA ATTACHED:

Figure 1: LC/MS Data (TIC and Mass Spectrum)

Figure 2: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

See page 2 for further details.

Contains 4 mole eq. of NaOH to prevent conversion of the carboxylic acid to the methyl ester.

Contains ~ 0.2% of Perfluoro-n-pentanoic acid (PFPeA).

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By:

Date: 12/23/2015

Wellington Laboratories Inc., 345 Southgate Dr. Guelph ON N1G 3M5 CANADA 519-822-2436 • Fax: 519-822-2849 • info@well-labs.com

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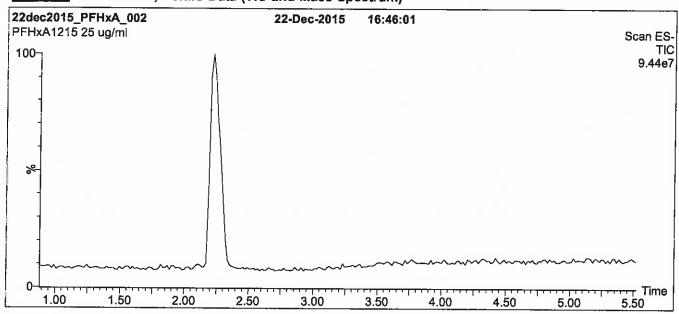
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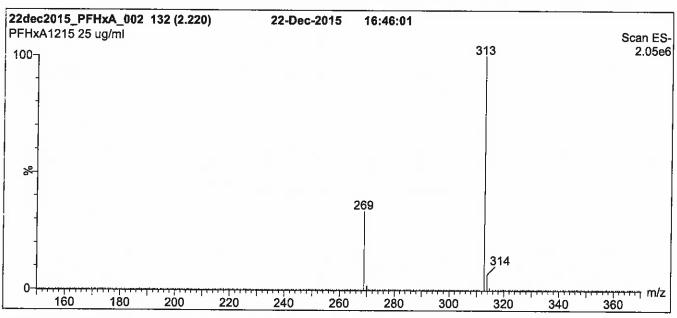




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Figure 1: PFHxA; LC/MS Data (TIC and Mass Spectrum)





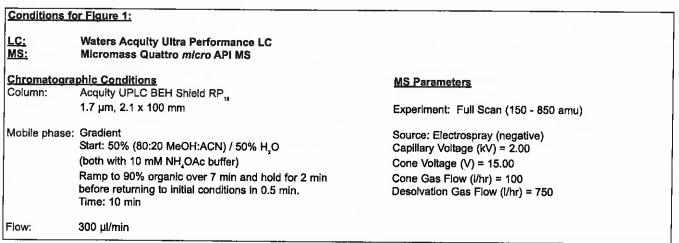
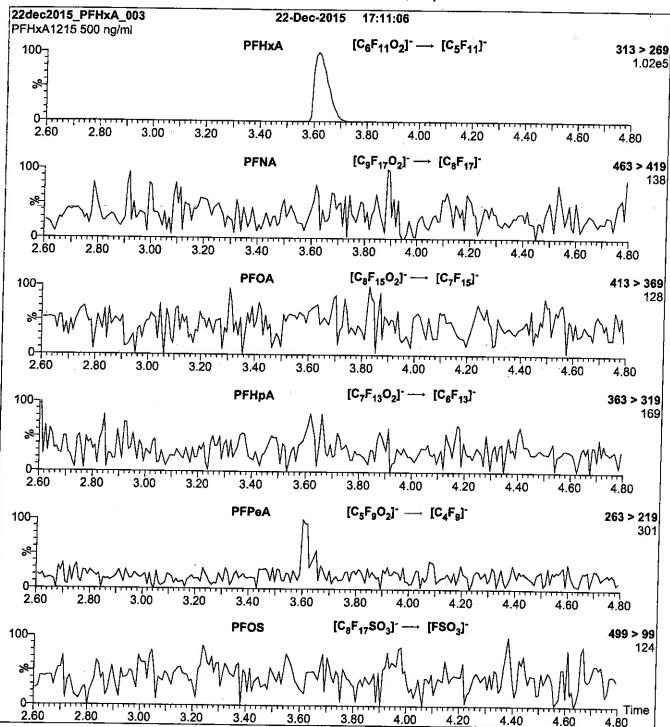
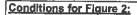


Figure 2: PFHxA; LC/MS/MS Data (Selected MRM Transitions)





Injection:

Direct loop injection

10 μl (500 ng/ml PFHxA)

Mobile phase: Isocratic 80% (80:20 MeOH:ACN) / 20% H_aO

(both with 10 mM NH,OAc buffer)

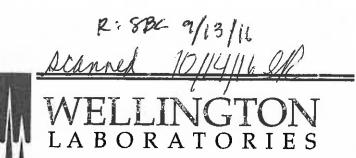
Flow:

300 µl/min

MS Parameters

Collision Gas (mbar) = 3.43e-3 Collision Energy (eV) = 10

LCPFHxDA_00007



ID: LCPFHxDA_00006 Exp: 05/25/21 Prpd: SBC PFHxDA stock 50ug/mL

ID: LCPFHxDA_00007 Exp: 05/25/21 Prpd: SBC PFHxOA stock 50ug/ml.

CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE:

PFHxDA

LOT NUMBER:

PFHxDA0516

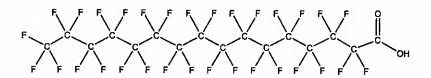
COMPOUND:

Perfluoro-n-hexadecanoic acid

STRUCTURE:

CAS #:

67905-19-5



MOLECULAR FORMULA:

C,HF,O,

50 ± 2.5 µg/mi

MOLECULAR WEIGHT:

814.13

SOLVENT(S):

Methanol Water (<1%)

CHEMICAL PURITY:

CONCENTRATION:

>98%

LAST TESTED: (mm/dd/yyyy)

05/25/2016

EXPIRY DATE: (mm/dd/yyyy)

05/25/2021

RECOMMENDED STORAGE:

Store ampoule in a cool, dark place

DOCUMENTATION/ DATA ATTACHED:

Figure 1: LC/MS Data (TIC and Mass Spectrum)

Figure 2: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

See page 2 for further details.

Contains 4 mole eq. of NaOH to prevent conversion of the carboxylic acid to the methyl ester.

Contains ~ 0.4% of PFODA.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By:

Date: 05/27/2016

Wellington Laboratories Inc., 345 Southgate Dr. Guelph ON N1G 3M5 CANADA 519-822-2436 • Fax: 519-822-2849 • info@well-labs.com

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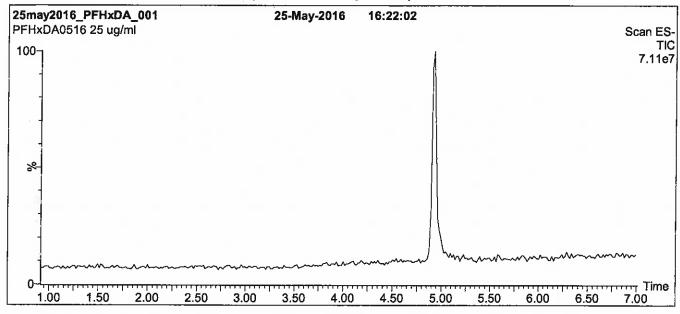
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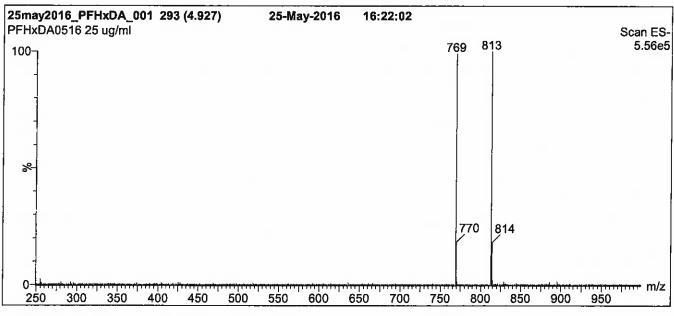




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Figure 1: PFHxDA; LC/MS Data (TIC and Mass Spectrum)





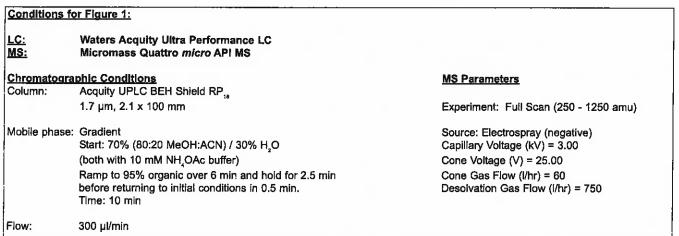
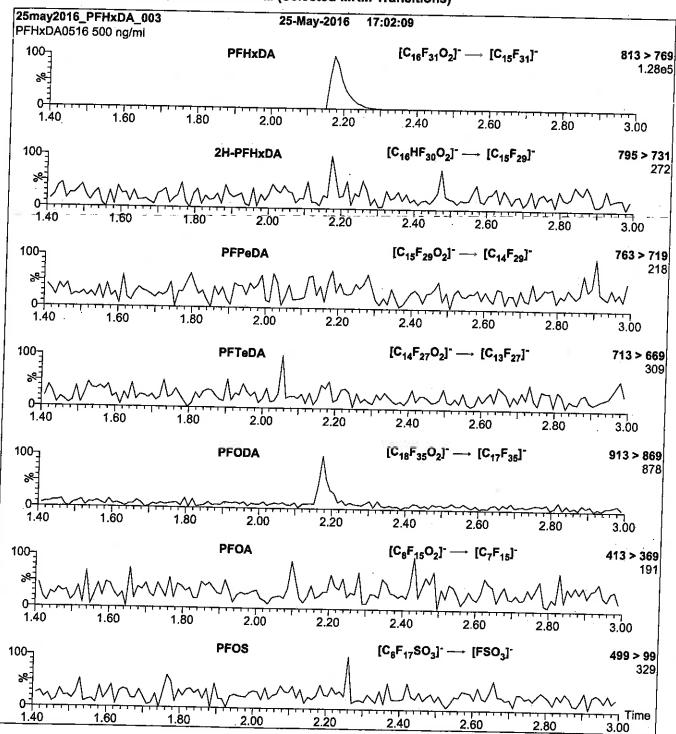
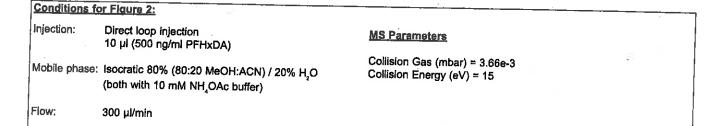
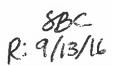


Figure 2: PFHxDA; LC/MS/MS Data (Selected MRM Transitions)





LCPFHxS-br_00003





ID: LCPFHxS-br_00002 Exp: 07/03/20 Prpd: SBC Potassium Perfluorchexane



ID: LCPFHxS-br_00003
Exp: 07/03/20 Prpd: SBC
Potassium Perfluorohexane



WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

br-PFHxSK

Potassium Perfluorohexanesulfonate Solution/Mixture of Linear and Branched Isomers

PRODUCT CODE:

br-PFHxSK

LOT NUMBER:

brPFHxSK0615

CONCENTRATION:

 $50.0 \pm 2.5 \,\mu\text{g/ml}$ (total potassium salt)

45.5 ± 2.3 μg/ml (total PFHxS anion)

SOLVENT(S):

Methanol

DATE PREPARED: (mm/dd/yyyy)

06/29/2015

LAST TESTED: (mm/dd/yyyy)

07/03/2015

EXPIRY DATE: (mm/dd/yyyy)

07/03/2020

RECOMMENDED STORAGE:

Store ampoule in a cool, dark place

DESCRIPTION:

The chemical purity has been determined to be ≥98% perfluorohexanesulfonate linear and branched isomers. The full name, structure and percent composition for each of the identified isomeric components are given in Table A.

DOCUMENTATION/ DATA ATTACHED:

Table A: Isomeric Components and Percent Composition by 19F-NMR

Figure 1: LC/MS Data (TIC and Mass Spectrum)

Figure 2: LC/MS Data

Figure 3: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

See page 2 for further details.

Contains ~ 0.5% of perfluoro-1-pentanesulfonate and ~ 0.2% of perfluoro-1-octanesulfonate.

CAS#: 3871-99-6 (for linear isomer; potassium salt).

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Wellington Laboratories Inc., 345 Southgate Dr. Guelph ON N1G 3M5 CANADA 519-822-2436 • Fax: 519-822-2849 • info@well-labs.com

The products prepared by Wellington Laboratories Inc. are for laboratory use only. This certified reference material (CRM) was designed to be used as a standard for the identification and/or quantification of the specific chemical compounds it contains.

HAZARDS:

This product should only be used by qualified personnel familiar with its potential hazards and trained in the handling of hazardous chemicals. Due care should be exercised to prevent unnecessary human contact or ingestion. All procedures should be carried out in a well-functioning fume hood and suitable gloves, eye protection, and clothing should be worn at all times. Waste should be disposed of according to national and regional regulations. Safety Data Sheets (SDSs) are available upon request.

SYNTHESIS / CHARACTERIZATION:

Where possible, all of our products are synthesized using single-product unambiguous routes. They are then characterized, and their structures and purities confirmed, using a combination of the most relevant techniques, such as NMR, GC/MS, LC/MS/MS, SFC/UV/MS/MS, x-ray crystallography, and meiting point. Isotopic purities of mass-labelled compounds are also confirmed using HRGC/HRMS and/or LC/MS/MS.

HOMOGENEITY:

Prior to solution preparation, crystalline material is tested for homogeneity using a variety of techniques (as stated above) and its solubility in a given diluent is taken into consideration. Duplicate solutions of a new product are prepared from the same crystalline lot and, after the addition of an appropriate internal standard, they are compared by GC/MS, LC/MS/MS and/or SFC/UV/MS/MS. The relative response factors of the analyte of interest in each solution are required to be <5% RSD. New solution lots of existing products are compared to older lots in the same manner, which further confirms the homogeneity of the crystalline material as well as the stability and homogeneity of the solutions in the storage containers.

UNCERTAINTY:

The maximum combined relative standard uncertainty of our reference standard solutions is calculated using the following equation:

The combined relative standard uncertainty, $u_c(y)$, of a value y and the uncertainty of the independent parameters

 $X_1, X_2, ... X_n$ on which it depends is:

$$u_c(y(x_1, x_2, ...x_n)) = \sqrt{\sum_{i=1}^n u(y, x_i)^2}$$

where x is expressed as a relative standard uncertainty of the individual parameter.

The individual uncertainties taken into account include those associated with weights (calibration of the balance) and volumes (calibration of the volumetric glassware). An expanded maximum combined percent relative uncertainty of $\pm 5\%$ (calculated with a coverage factor of 2 and a level of confidence of 95%) is stated on the Certificate of Analysis for all of our products.

TRACEABILITY:

All reference standard solutions are traceable to specific crystalline lots. The microbalances used for solution preparation are regularly tested by an external ISO/IEC 17025 accredited calibration company. In addition, their calibration is verified prior to each weighing using NIST and/or NRC traceable external weights. All volumetric glassware used is of Class A tolerance and has been tested according to the appropriate ASTM procedures, which are ultimately traceable to NIST. For certain products, traceability to international interlaboratory studies has also been established.

EXPIRY DATE / PERIOD OF VALIDITY:

Ongoing stability studies of this product have demonstrated stability in its composition and concentration, until the specified explry date, in the unopened ampoule. Monitoring for any degradation or change in concentration of the listed analyte(s) is performed on a routine basis.

LIMITED WARRANTY:

At the time of shipment, all products are warranted to be free of defects in material and workmanship and to conform to the stated technical and purity specifications.

QUALITY MANAGEMENT:

This product was produced using a Quality Management System registered to the latest versions of ISO 9001 by SAI Global, ISO/IEC 17025 by the Canadian Association for Laboratory Accreditation Inc. (CALA; A 1226), and ISO GUIDE 34 by ANSI-ASQ National Accreditation Board (ANAB; AR-1523).





For additional information or assistance concerning this or any other products from Wellington Laboratories Inc., please visit our website at www.well-labs.com or contact us directly at info@well-labs.com

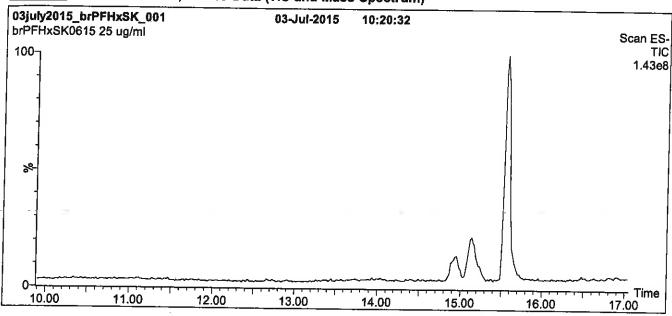
Table A: br-PFHxSK; Isomeric Components and Percent Composition (by 19F-NMR)*

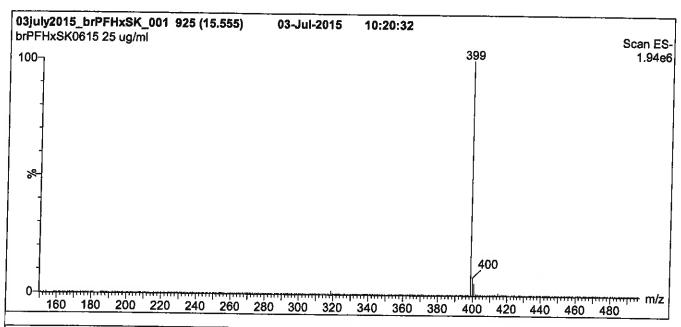
Isomer	Name	Structure	Percent Composition by ¹⁹ F-NMR
1	Potassium perfluoro-1-hexanesulfonate	CF ₃ CF ₂ CF ₂ CF ₂ CF ₂ CF ₂ SO ₃ -K+	81.1
2	Potassium 1-trifluoromethylperfluoropentanesulfonate**	CF ₃ CF ₂ CF ₂ CF ₂ CF ₂ SO ₃ -K+ CF ₃	2.9
3	Potassium 2-trifluoromethylperfluoropentanesulfonate	CF ₃ CF ₂ CF ₂ CF ₂ CF ₂ SO ₃ -K ⁺ CF ₃	1.4
4	Potassium 3-trifluoromethylperfluoropentanesulfonate	CF ₃ CF ₂ CF ₂ CF ₂ CF ₂ SO ₃ -K+ CF ₃	5.0
5	Potassium 4-trifluoromethylperfluoropentanesulfonate	CF ₃ CF ₂ CF ₂ CF ₂ CF ₂ SO ₃ -K+ CF ₃	8.9
6	Potassium 3,3-di(trifluoromethyl)perfluorobutanesulfonate	CF ₃ CF ₃ CCF ₂ CF ₂ SO ₃ -K ⁺ CF ₃	0.2
7	Other Unidentified Isomers		0.5

Percent of total perfluorohexanesulfonate isomers only.
 Systematic Name: Potassium perfluorohexane-2-sulfonate.

Certified By: Date: 07/15/2015

Figure 1: br-PFHxSK; LC/MS Data (TIC and Mass Spectrum)







LC: Waters Acquity Ultra Performance LC
MS: Micromass Quattro micro API MS

Chromatographic Conditions

Column: Acquity UPLC BEH Shield RP14

1.7 µm, 2.1 x 100 mm

Mobile phase: Gradient

Start: 20% (80:20 MeOH:ACN) / 80% H₂O (both with 10 mM NH₄OAc buffer) Ramp to 50% organic over 14 min. Ramp to 90% organic over 3 min and hold for 1.5 min before returning to initial conditions in 0.5 min.

Time: 20 min

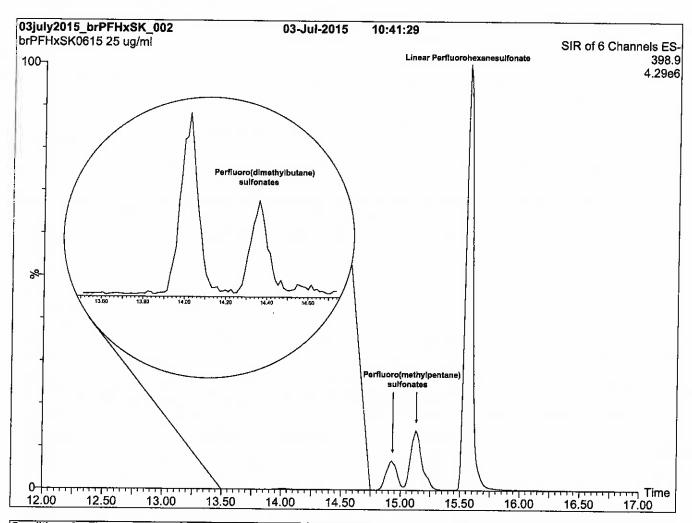
Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (150 - 850 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 3.00
Cone Voltage (V) = 50.00
Cone Gas Flow (l/hr) = 60
Desolvation Gas Flow (l/hr) = 750

Figure 2: br-PFHxSK; LC/MS Data



Conditions for Figure 2:

<u>LC:</u> MS: Waters Acquity Ultra Performance LC Micromass Quattro micro API MS

Chromatographic Conditions

Column:

Acquity UPLC BEH Shield RP, 18

1.7 µm, 2.1 x 100 mm

Mobile phase: Gradient

Start: 20% (80:20 MeOH:ACN) / 80% H₂O

(both with 10 mM NH₄OAc buffer)
Ramp to 50% organic over 14 min. Ramp to 90% organic over 3 min and hold for 1.5 min

before returning to initial conditions in 0.5 min.

Time: 20 min

Flow:

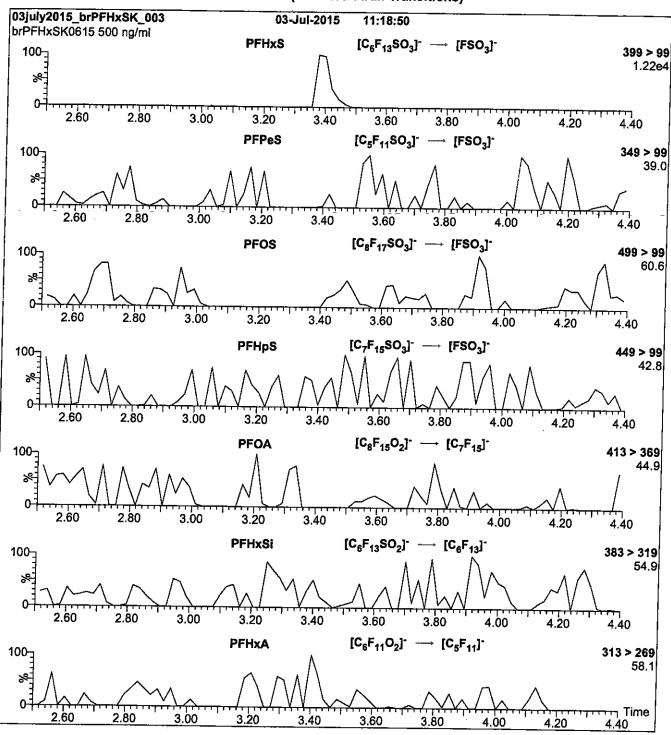
300 µl/min

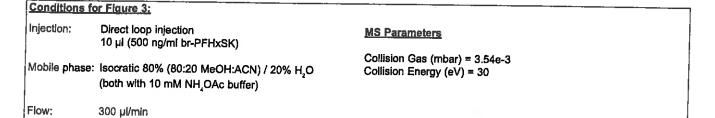
MS Parameters

Experiment: SIR (6 channels)

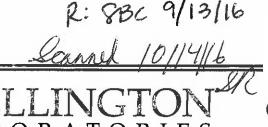
Source: Electrospray (negative) Capillary Voltage (kV) = 3.00 Cone Voltage (V) = 50.00 Cone Gas Flow (l/hr) = 60 Desolvation Gas Flow (l/hr) = 750

Figure 3: br-PFHxSK; LC/MS/MS Data (Selected MRM Transitions)





LCPFNA 00007





ID: LCPFNA_00006 Exp: 10/23/20 Prpd: SBC PF-n-nonanoic acid



Exp: 10/23/20 Prpti: SBC PF-n-nonanoic acid

CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE:

PFNA

LOT NUMBER:

PFNA1015

COMPOUND:

Perfluoro-n-nonanoic acid

CAS #:

375-95-1

STRUCTURE:

MOLECULAR FORMULA:

C,HF,O,

CONCENTRATION:

 $50 \pm 2.5 \, \mu g/ml$

MOLECULAR WEIGHT:

SOLVENT(S):

464.08

Methanol

Water (<1%)

CHEMICAL PURITY:

>98%

LAST TESTED: (mm/dd/yyyy)

10/23/2015

EXPIRY DATE: (mm/dd/yyyy)

10/23/2020

RECOMMENDED STORAGE:

Store ampoule in a cool, dark place

DOCUMENTATION/ DATA ATTACHED:

Figure 1: LC/MS Data (TIC and Mass Spectrum)

Figure 2: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

See page 2 for further details.

Contains 4 mole eq. of NaOH to prevent conversion of the carboxylic acid to the methyl ester.

Contains ~ 0.1% of perfluoro-n-octanoic acid (PFOA) and < 0.1% of perfluoro-n-heptanoic acid (PFHpA).

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By:

Date:

10/30/2015

Wellington Laboratories Inc., 345 Southgate Dr. Guelph ON N1G 3M5 CANADA 519-822-2436 • Fax: 519-822-2849 • info@well-labs.com

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TRACEABILITY:

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EXPIRY DATE / PERIOD OF VALIDITY:

Ongoing stability studies of this product have demonstrated stability in its composition and concentration, until the specified expiry date, in the unopened ampoule. Monitoring for any degradation or change in concentration of the listed analyte(s) is performed on a routine basis.

LIMITED WARRANTY:

At the time of shipment, all products are warranted to be free of defects in material and workmanship and to conform to the stated technical and purity specifications.

QUALITY MANAGEMENT:

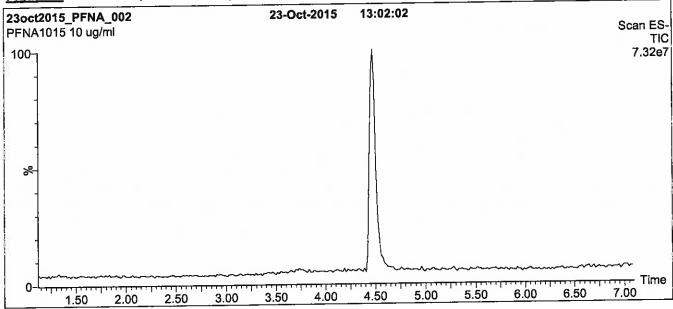
This product was produced using a Quality Management System registered to the latest versions of ISO 9001 by SAI Global, ISO/IEC 17025 by the Canadian Association for Laboratory Accreditation Inc. (CALA; A 1226), and ISO GUIDE 34 by ANSI-ASQ National Accreditation Board (ANAB; AR-1523).

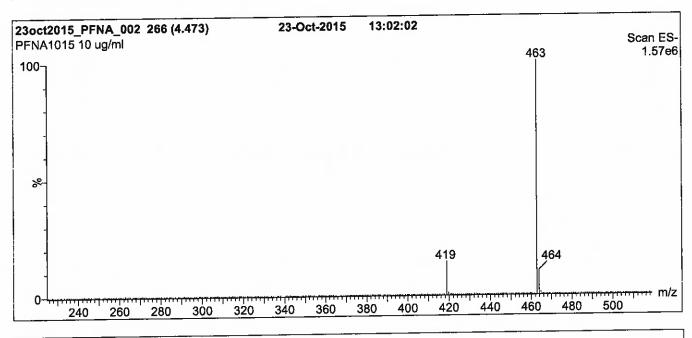




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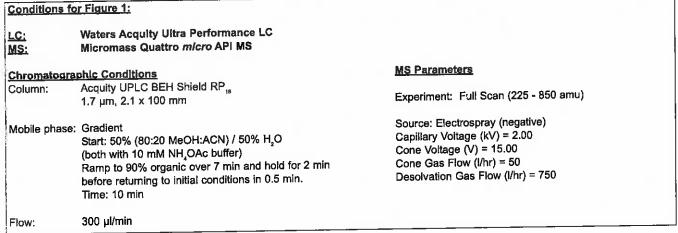
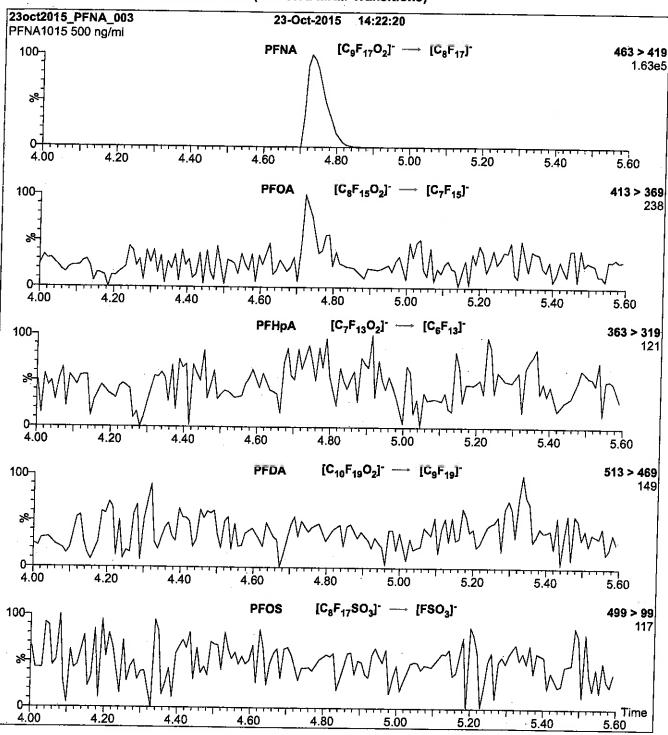
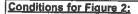


Figure 2: PFNA; LC/MS/MS Data (Selected MRM Transitions)





Injection:

Direct loop injection

10 µl (500 ng/ml PFNA)

Mobile phase: Isocratic 80% (80:20 MeOH:ACN) / 20% H_oO

(both with 10 mM NH OAc buffer)

Flow:

300 µl/min

MS Parameters

Collision Gas (mbar) = 3.28e-3 Collision Energy (eV) = 11

LCPFOA_00007



CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE:

PFOA

Perfluoro-n-octanoic acid

LOT NUMBER:

PFOA0716

STRUCTURE:

COMPOUND:

CAS #:

335-67-1

MOLECULAR FORMULA:

CONCENTRATION:

CaHFIO2

50 ± 2.5 µg/ml

MOLECULAR WEIGHT:

SOLVENT(S):

414.07

Methanol

Water (<1%)

CHEMICAL PURITY:

>98%

LAST TESTED: (mm/dd/yyyy)

08/02/2016

EXPIRY DATE: (mm/dd/yyyy)

08/02/2021

RECOMMENDED STORAGE:

Store ampoule in a cool, dark place

DOCUMENTATION/ DATA ATTACHED:

Figure 1: LC/MS Data (TIC and Mass Spectrum)

Figure 2: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

See page 2 for further details.

Contains 4 mole eq. of NaOH to prevent conversion of the carboxylic acid to the methyl ester.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By:

B.G. Chittim

Date: 08/05/2016

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LIMITED WARRANTY:

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QUALITY MANAGEMENT:

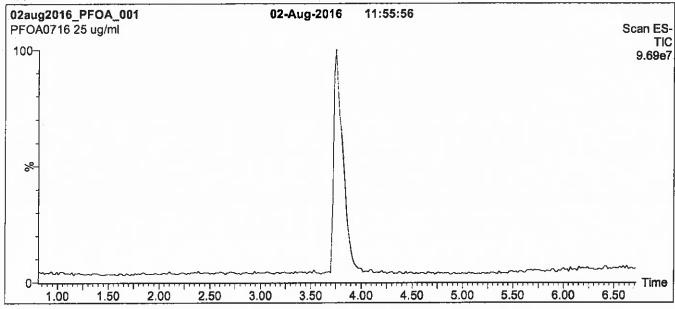
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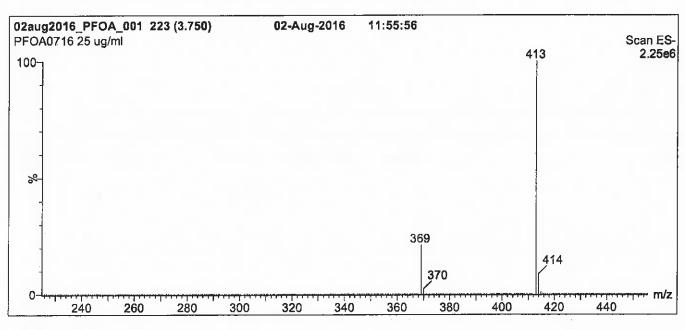




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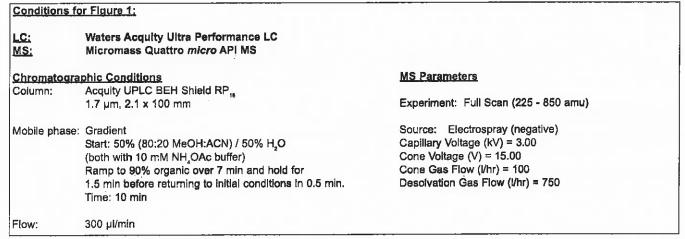
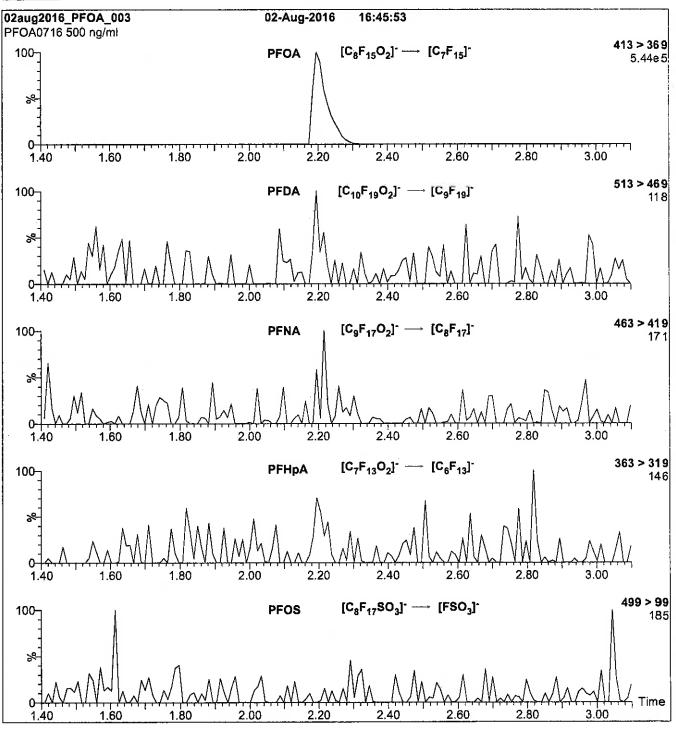


Figure 2: PFOA; LC/MS/MS Data (Selected MRM Transitions)





injection:

Direct loop injection

10 μl (500 ng/ml PFOA)

Mobile phase: Isocratic 80% (80:20 MeOH:ACN) / 20% H,O

ISOCIALIS GO/6 (CO.20 MICOTILACIV) / 20

(both with 10 mM NH₄OAc buffer)

Flow:

300 µl/min

MS Parameters

Collision Gas (mbar) = 3.43e-3 Collision Energy (eV) = 10

LCPFODA 00007





CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE:

PFODA

LOT NUMBER:

PFODA0416

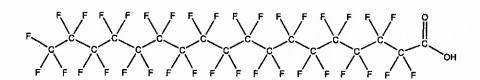
COMPOUND:

Perfluoro-n-octadecanoic acid

STRUCTURE:

CAS #:

16517-11-6



MOLECULAR FORMULA:

C₁₈HF₃₅O₂

50 105 ----

MOLECULAR WEIGHT:

11.

CONCENTRATION:

 $50 \pm 2.5 \, \mu g/ml$

SOLVENT(S):

Methanoi Water (<1%)

914.14

CHEMICAL PURITY:

>98%

LAST TESTED: (mm/dd/yyyy)

04/29/2016

EXPIRY DATE: (mm/dd/yyyy)

04/29/2021

RECOMMENDED STORAGE:

Store ampoule in a cool, dark place

DOCUMENTATION/ DATA ATTACHED:

Figure 1: LC/MS Data (TIC and Mass Spectrum)

Figure 2: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

- See page 2 for further details.
- Contains 4 mole eq. of NaOH to prevent conversion of the carboxylic acid to the methyl ester.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By:

B.G. Chittim

Date:

05/20/2016

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QUALITY MANAGEMENT:

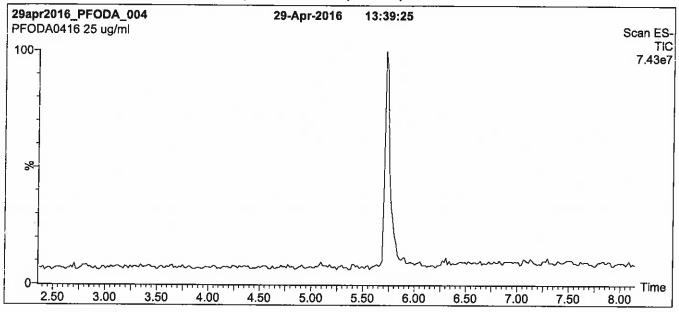
This product was produced using a Quality Management System registered to the latest versions of ISO 9001 by SAI Global, ISO/IEC 17025 by the Canadian Association for Laboratory Accreditation Inc. (CALA; A 1226), and ISO GUIDE 34 by ANSI-ASQ National Accreditation Board (ANAB: AR-1523).

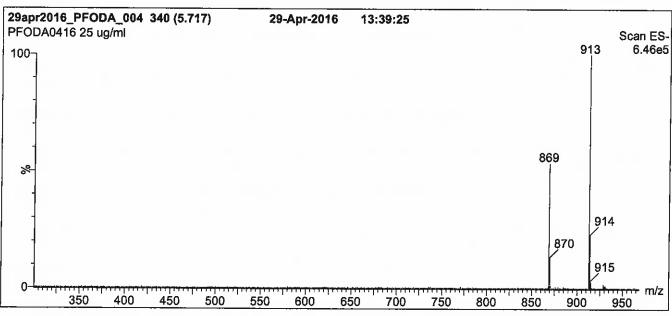




For additional information or assistance concerning this or any other products from Wellington Laboratories Inc., please visit our website at www.well-labs.com or contact us directly at info@well-labs.com

Figure 1: PFODA; LC/MS Data (TIC and Mass Spectrum)





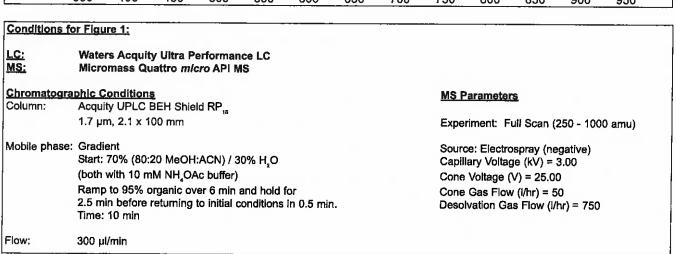
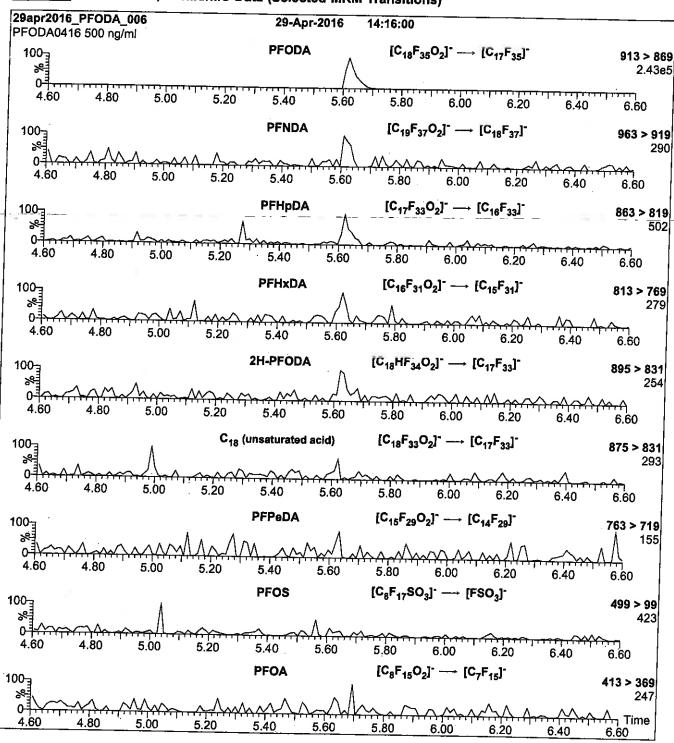
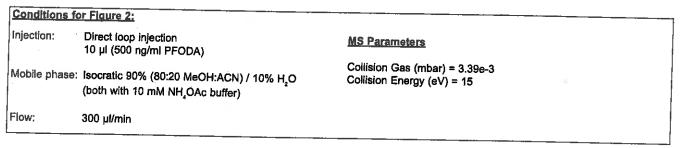
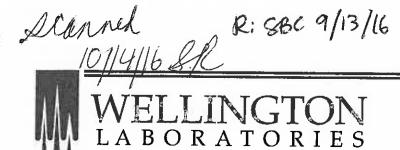


Figure 2: PFODA; LC/MS/MS Data (Selected MRM Transitions)





LCPFOS-br_00003





ID: LCPFOS-br_00002 Exp: 10/14/20 Prpd: SBC Potassium Perfluorocctane 730516

ID: LCPFOS-br_00003

Exp: 10/14/20 Prpd: SBC

Potassium Perfluorooctane

CERTIFICATE OF ANALYSIS DOCUMENTATION

br-PFOSK

Potassium Perfluorooctanesulfonate Solution/Mixture of Linear and Branched Isomers

PRODUCT CODE:

br-PFOSK

LOT NUMBER:

brPFOSK1015

CONCENTRATION:

50 ± 2.5 μg/ml (total potassium salt)

46.4 ± 2.3 µg/ml (total PFOS anion)

SOLVENT(S):

Methanol

DATE PREPARED: (mm/dd/yyyy)

10/13/2015

LAST TESTED: (mm/dd/yyyy)

10/14/2015

EXPIRY DATE: (mm/dd/yyyy)

10/14/2020

RECOMMENDED STORAGE:

Store ampoule in a cool, dark place

DESCRIPTION:

The chemical purity has been determined to be ≥98% perfluorooctanesulfonate linear and branched isomers. The full name, structure and percent composition for each of the isomeric components are given in Table A.

DOCUMENTATION/ DATA ATTACHED:

Table A: Isomeric Components and Percent Composition by 19F-NMR

Figure 1: LC/MS Data (TIC and Mass Spectrum)

Figure 2: LC/MS Data (SIR)

Figure 3: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

See page 2 for further details.

 A 5-point calibration curve was generated using linear PFOS (potassium salt) and mass-labelled PFOS as an internal standard to enable quantitation of br-PFOSK using isotopic dilution.

CAS#: 2795-39-3 (for linear isomer; potassium salt).

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Wellington Laboratories Inc., 345 Southgate Dr. Guelph ON N1G 3M5 CANADA 519-822-2436 • Fax: 519-822-2849 • info@well-labs.com

The products prepared by Wellington Laboratories Inc. are for laboratory use only. This certified reference material (CRM) was designed to be used as a standard for the identification and/or quantification of the specific chemical compounds it contains.

HAZARDS:

This product should only be used by qualified personnel familiar with its potential hazards and trained in the handling of hazardous chemicals. Due care should be exercised to prevent unnecessary human contact or ingestion. All procedures should be carried out in a well-functioning fume hood and suitable gloves, eye protection, and clothing should be worn at all times. Waste should be disposed of according to national and regional regulations. Safety Data Sheets (SDSs) are available upon request.

SYNTHESIS / CHARACTERIZATION:

Where possible, all of our products are synthesized using single-product unambiguous routes. They are then characterized, and their structures and purities confirmed, using a combination of the most relevant techniques, such as NMR, GC/MS, LC/MS/MS, SFC/UV/MS/MS, x-ray crystallography, and melting point. Isotopic purities of mass-labelled compounds are also confirmed using HRGC/HRMS and/or LC/MS/MS.

HOMOGENEITY:

Prior to solution preparation, crystalline material is tested for homogeneity using a variety of techniques (as stated above) and its solubility in a given diluent is taken into consideration. Duplicate solutions of a new product are prepared from the same crystalline lot and, after the addition of an appropriate internal standard, they are compared by GC/MS, LC/MS/MS and/or SFC/UV/MS/MS. The relative response factors of the analyte of interest in each solution are required to be <5% RSD. New solution lots of existing products are compared to older lots in the same manner, which further confirms the homogeneity of the crystalline material as well as the stability and homogeneity of the solutions in the storage containers.

UNCERTAINTY:

The maximum combined relative standard uncertainty of our reference standard solutions is calculated using the following equation:

The combined relative standard uncertainty, $u_c(y)$, of a value y and the uncertainty of the independent parameters $x_a, x_a, ..., x_n$ on which it depends is:

$$u_c(y(x_1, x_2, ...x_n)) = \sqrt{\sum_{i=1}^n u(y, x_i)^2}$$

where x is expressed as a relative standard uncertainty of the individual parameter.

The individual uncertainties taken into account include those associated with weights (calibration of the balance) and volumes (calibration of the volumetric glassware). An expanded maximum combined percent relative uncertainty of $\pm 5\%$ (calculated with a coverage factor of 2 and a level of confidence of 95%) is stated on the Certificate of Analysis for all of our products.

TRACEABILITY:

All reference standard solutions are traceable to specific crystalline lots. The microbalances used for solution preparation are regularly tested by an external ISO/IEC 17025 accredited calibration company. In addition, their calibration is verified prior to each weighing using NIST and/or NRC traceable external weights. All volumetric glassware used is of Class A tolerance and has been tested according to the appropriate ASTM procedures, which are ultimately traceable to NIST. For certain products, traceability to international interlaboratory studies has also been established.

EXPIRY DATE / PERIOD OF VALIDITY:

Ongoing stability studies of this product have demonstrated stability in its composition and concentration, until the specified expiry date, in the unopened ampoule. Monitoring for any degradation or change in concentration of the listed analyte(s) is performed on a routine basis

LIMITED WARRANTY:

At the time of shipment, all products are warranted to be free of defects in material and workmanship and to conform to the stated technical and purity specifications.

QUALITY MANAGEMENT:

This product was produced using a Quality Management System registered to the latest versions of ISO 9001 by SAI Global, ISO/IEC 17025 by the Canadian Association for Laboratory Accreditation Inc. (CALA; A 1226), and ISO GUIDE 34 by ANSI-ASQ National Accreditation Board (ANAB; AR-1523).





For additional information or assistance concerning this or any other products from Wellington Laboratories Inc., please visit our website at www.well-labs.com or contact us directly at info@well-labs.com

Table A: br-PFOSK; Isomeric Components and Percent Composition (by 19F-NMR)*

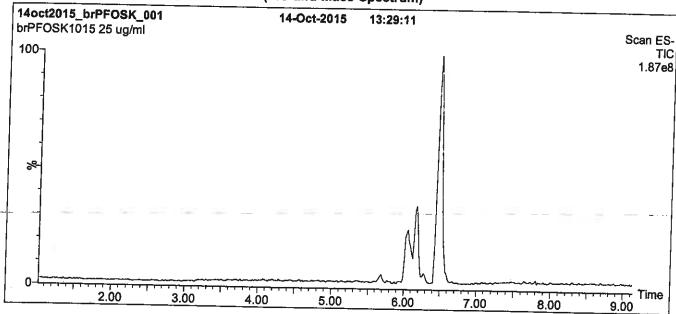
Isomer	Name	Structure	Percent Composition by ¹ºF-NMR
1	Potassium perfluoro-1-octanesulfonate	CF ₃ CF ₂ SO ₃ K*	78.8
2	Potassium 1-trifluoromethylperfluoroheptanesulfonate**	CF ₃ CF ₂ CF ₂ CF ₂ CF ₂ CF ₃	1.2
3	Potassium 2-trifluoromethylperfluoroheptanesulfonate	CF ₃ CF ₂ CF ₂ CF ₂ CF ₂ CF ₂ SO ₃ K ⁴ CF ₃	0.6
4	Potassium 3-trifluoromethylperfluoroheptanesulfonate	CF ₃ CF ₂ CF ₂ CF ₂ CF ₂ CF ₂ SO ₃ K ⁴ CF ₃	1.9
5	Potassium 4-trifluoromethylperfluoroheptanesulfonate	CF ₃ CF ₂ CF ₂ CFCF ₂ CF ₂ CF ₂ SO ₃ K ⁺ CF ₃	2.2
6	Potassium 5-trifluoromethylperfluoroheptanesulfonate	CF ₃ CF ₂ CF ₂ CF ₂ CF ₂ CF ₂ SO ₃ K ⁺ CF ₃	4.5
7	Potassium 6-trifluoromethylperfluoroheptanesulfonate	CF ₃ CFCF ₂ CF ₂ CF ₂ CF ₂ CF ₂ SO ₃ K ⁴ CF ₃	10.0
8	Potassium 5,5-di(trifluoromethyl)perfluorohexanesulfonate	CF ₃ CF ₃ -CCF ₂ CF ₂ CF ₂ CF ₂ SO ₃ K ⁺ CF ₃	0.2
9	Potassium 4,4-di(trifluoromethyl)perfluorohexanesulfonate	CF ₃ CF ₃ CF ₂ —C—CF ₂ CF ₂ CF ₂ SO ₃ K ⁺ CF ₃	0.03
10	Potassium 4,5-di(trifluoromethyl)perfluorohexanesulfonate	CF ₃ —CF—CF—CF ₂ CF ₂ CF ₂ SO ₃ K [↑] CF ₃ CF ₃	0.4
11	Potassium 3,5-di(trifluoromethyl)perfluorohexanesulfonate	CF ₃ -CF-CF ₂ -CF-CF ₂ CF ₂ SO ₃ K ⁺ CF ₃ CF ₃	0.07

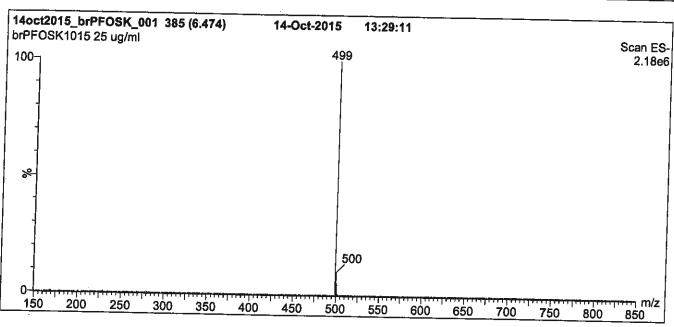
^{*} Percent of total perfluorooctanesulfonate isomers only. Isomers are labelled in Figure 2.
** Systematic Name: Potassium perfluorooctane-2-sulfonate.

Certified By: Date: 10/15/2015

B.G. Chittim







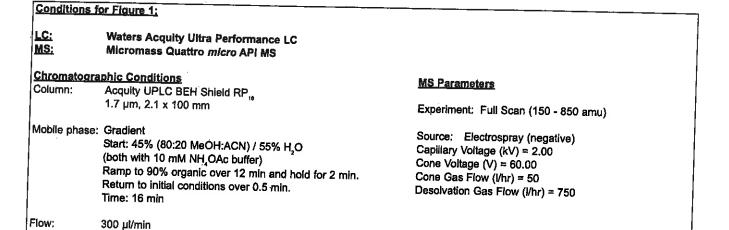
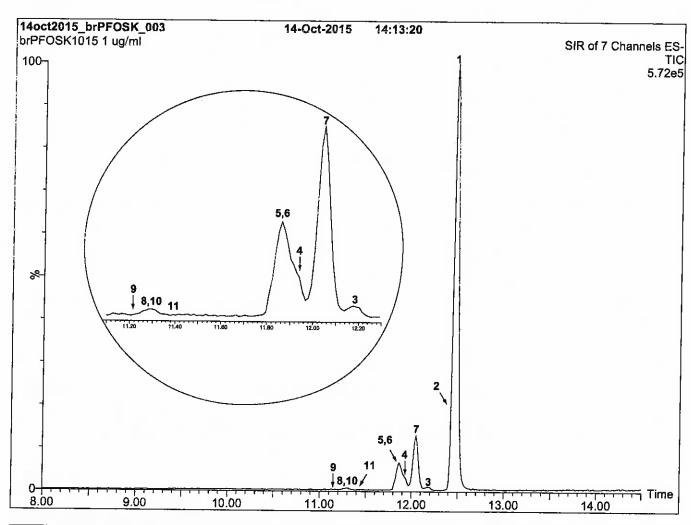


Figure 2: br-PFOSK; LC/MS Data (SIR)



Conditions for Figure 2:

LC: Waters Acquity Ultra Performance LC

MS: Micromass Quattro micro API MS

Chromatographic Conditions:

Column:

Acquity UPLC BEH Shield RP, a (1.7 μ m, 2.1 x 100 mm)

Injection:

1.0 µg/ml of br-PFOSK

Mobile Phase:

Gradient

45% (80:20 MeOH:ACN) / 55% $\rm{H_2O}$ (both with 10 mM NH₄OAc buffer)

Ramp to 90% organic over 15 min and hold for 3 min.

Return to initial conditions over 1 min.

Time: 20 min

Flow:

300 µl/min

MS Conditions:

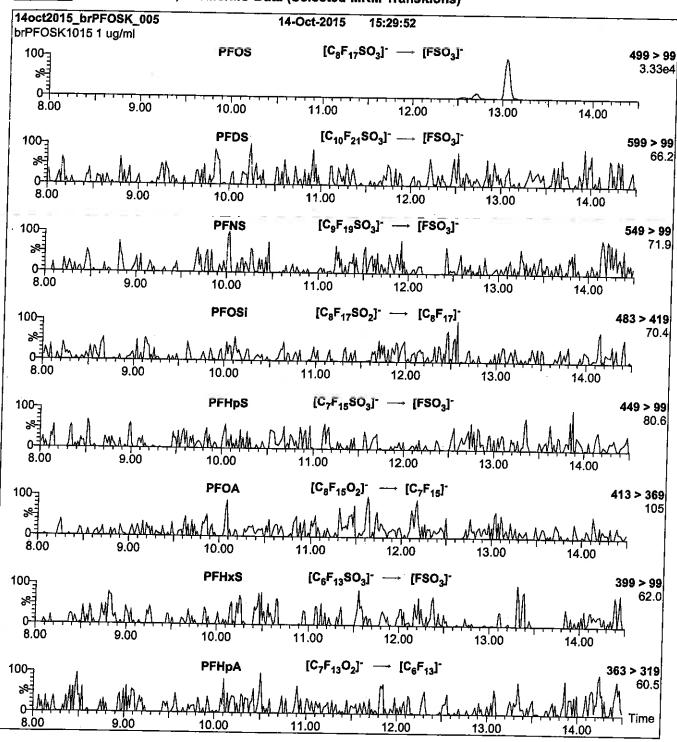
SIR (ES)

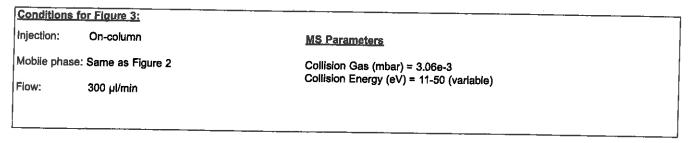
Source = 110 °C

Desolvation = 325 °C

Cone Voltage = 60V

Figure 3: br-PFOSK; LC/MS/MS Data (Selected MRM Transitions)





LCPFOSA_00010



CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE:

FOSA-I

FOSA0916I

COMPOUND:

Perfluoro-1-octanesulfonamide

STRUCTURE:

CAS #:

LOT NUMBER:

754-91-6

MOLECULAR FORMULA:

CaHaFi,NO2S

CONCENTRATION:

 $50 \pm 2.5 \,\mu g/ml$

CHEMICAL PURITY:

>98%

LAST TESTED: (mm/dd/yyyy)

09/30/2016

EXPIRY DATE: (mm/dd/yyy)

09/30/2021

RECOMMENDED STORAGE:

Refrigerate ampoule

MOLECULAR WEIGHT:

499.14

SOLVENT(S):

Isopropano!

DOCUMENTATION/ DATA ATTACHED:

Figure 1: LC/MS Data (TIC and Mass Spectrum)

Figure 2: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

See page 2 for further details.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By:

Date: 10/07/2016

The products prepared by Wellington Laboratories Inc. are for laboratory use only. This certified reference material (CRM) was designed to be used as a standard for the identification and/or quantification of the specific chemical compound it contains.

HAZARDS:

This product should only be used by qualified personnel familiar with its potential hazards and trained in the handling of hazardous chemicals. Due care should be exercised to prevent unnecessary human contact or ingestion. All procedures should be carried out in a well-functioning fume hood and suitable gloves, eye protection, and clothing should be worn at all times. Waste should be disposed of according to national and regional regulations. Safety Data Sheets (SDSs) are available upon request.

SYNTHESIS / CHARACTERIZATION:

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 on which it depends is:

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TRACEABILITY:

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EXPIRY DATE / PERIOD OF VALIDITY:

Ongoing stability studies of this product have demonstrated stability in its composition and concentration, until the specified expiry date, in the unopened ampoule. Monitoring for any degradation or change in concentration of the listed analyte(s) is performed on a routine basis.

LIMITED WARRANTY:

At the time of shipment, all products are warranted to be free of defects in material and workmanship and to conform to the stated technical and purity specifications.

QUALITY MANAGEMENT:

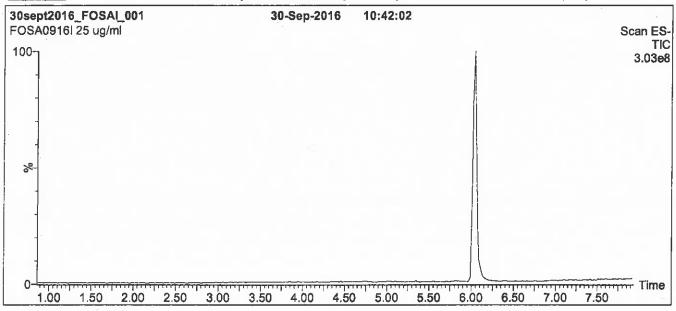
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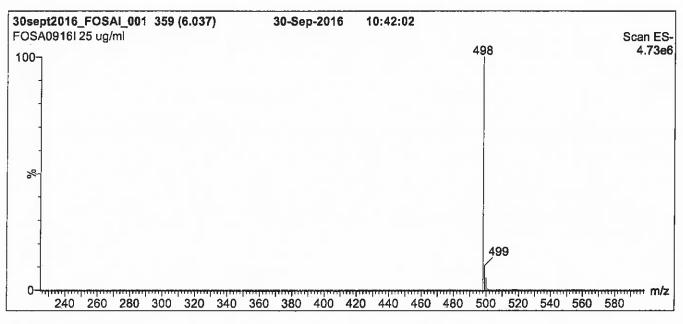


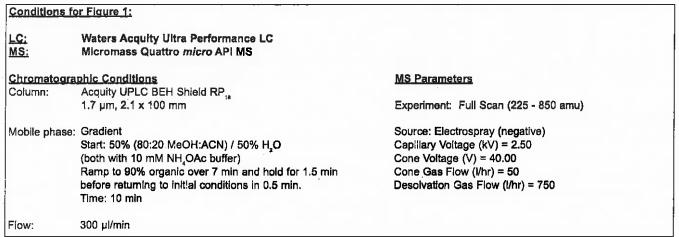


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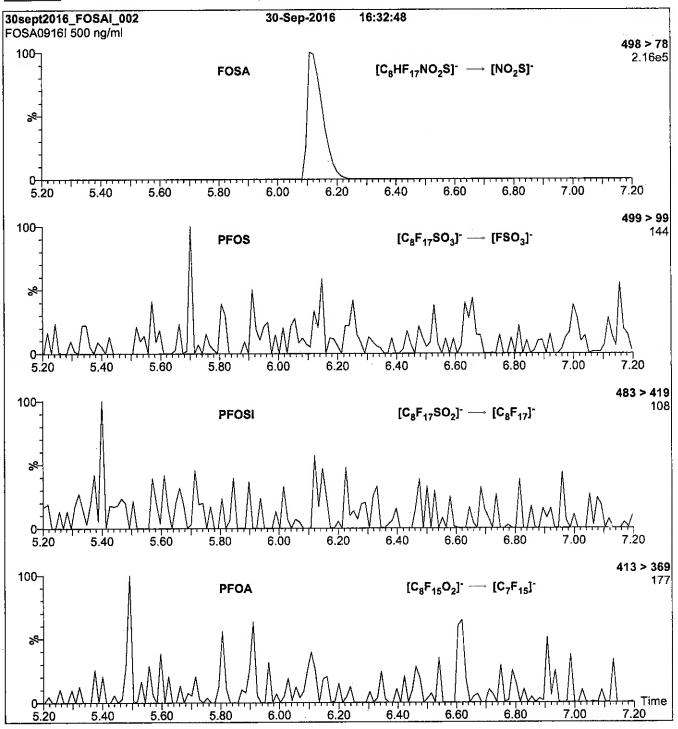
Figure 1: FOSA-I; LC/MS Data (TIC and Mass Spectrum)

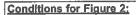






FOSA-I; LC/MS/MS Data (Selected MRM Transitions) Figure 2:





Injection:

Flow:

Direct loop injection

10 μl (500 ng/ml FOSA-I)

Mobile phase: Isocratic 80% (80:20 MeOH:ACN) / 20% H₂O (both with 10 mM NH₂OAc buffer)

300 µl/min

MS Parameters

Collision Gas (mbar) = 3.20e-3 Collision Energy (eV) = 30

Form#:27, Issued 2004-11-10 Revision#:3, Revised 2015-03-24

LCPFPeA_00006



CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE:

PFPeA

COMPOUND:

Perfluoro-n-pentanoic acid

STRUCTURE:

CAS #:

2706-90-3

PFPeA0516

MOLECULAR FORMULA:

CONCENTRATION:

C,HF,O,

 $50 \pm 2.5 \, \mu g/ml$

MOLECULAR WEIGHT:

SOLVENT(S):

LOT NUMBER:

264.05

Methanol

Water (<1%)

CHEMICAL PURITY:

>98%

LAST TESTED: (mm/dd/ywy)

05/31/2016

EXPIRY DATE: (mm/dd/yyyy)

05/31/2021

RECOMMENDED STORAGE:

Store ampoule in a cool, dark place

DOCUMENTATION/ DATA ATTACHED:

Figure 1: LC/MS Data (TIC and Mass Spectrum)

Figure 2: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

See page 2 for further details.

Contains 4 mole eq. of NaOH to prevent conversion of the carboxylic acid to the methyl ester.

Contains ~ 0.3% of Perfluoro-n-heptanoic acid (PFHpA) and ~ 0.2% of C₅H₂F₅O₃ (hydrido - derivative) as measured by 19F NMR.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By:

Date: 06/02/2016

The products prepared by Wellington Laboratories Inc. are for laboratory use only. This certified reference material (CRM) was designed to be used as a standard for the identification and/or quantification of the specific chemical compound it contains.

HAZARDS:

This product should only be used by qualified personnel familiar with its potential hazards and trained in the handling of hazardous chemicals. Due care should be exercised to prevent unnecessary human contact or ingestion. All procedures should be carried out in a well-functioning fume hood and suitable gloves, eye protection, and clothing should be worn at all times. Waste should be disposed of according to national and regional regulations. Safety Data Sheets (SDSs) are available upon request.

SYNTHESIS / CHARACTERIZATION:

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HOMOGENEITY:

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UNCERTAINTY:

The maximum combined relative standard uncertainty of our reference standard solutions is calculated using the following equation:

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$$x_1, x_2,...x_n$$
 on which it depends is:

$$u_c(y(x_1, x_2, ... x_n)) = \sqrt{\sum_{i=1}^n u(y, x_i)^2}$$

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TRACEABILITY:

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EXPIRY DATE / PERIOD OF VALIDITY:

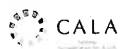
Ongoing stability studies of this product have demonstrated stability in its composition and concentration, until the specified expiry date, in the unopened ampoule. Monitoring for any degradation or change in concentration of the listed analyte(s) is performed on a routine basis.

LIMITED WARRANTY:

At the time of shipment, all products are warranted to be free of defects in material and workmanship and to conform to the stated technical and purity specifications.

QUALITY MANAGEMENT:

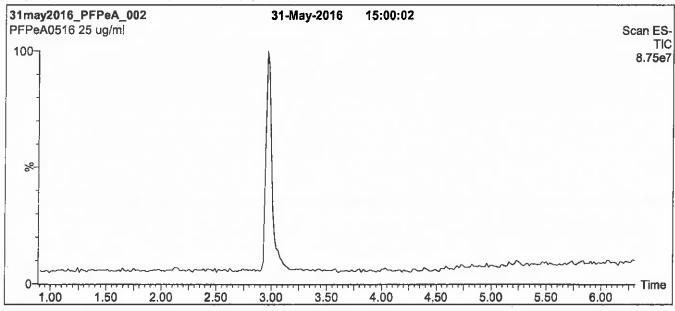
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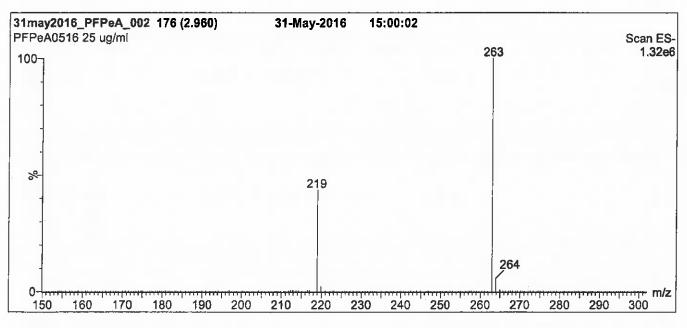




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Figure 1: PFPeA; LC/MS Data (TIC and Mass Spectrum)





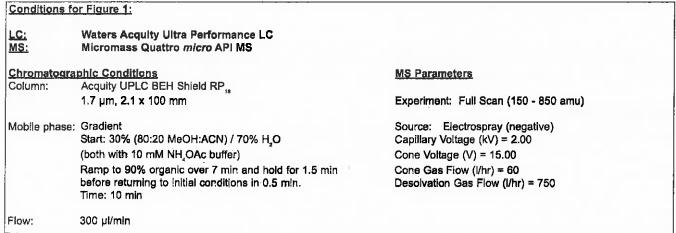
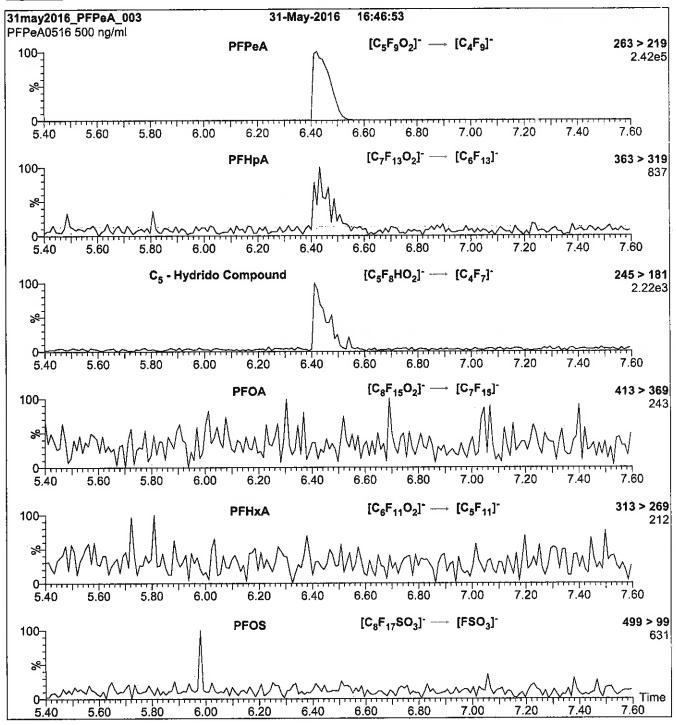
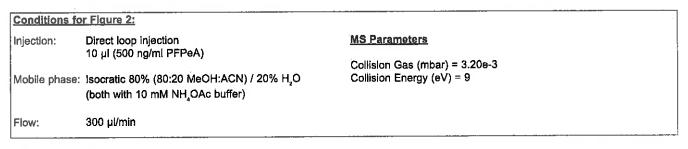


Figure 2: PFPeA; LC/MS/MS Data (Selected MRM Transitions)





Reagent

LCPFTeDA_00005



ID: LCPFTeDA_00005 Exp: 12/09/20 Prpd: \$8C PF-n-tetradecanoic acid

ID: LCPFTeDA_00006





VELLINGTON ABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE:

PFTeDA

LOT NUMBER:

PFTeDA1215

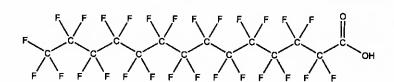
COMPOUND:

STRUCTURE:

Perfluoro-n-tetradecanoic acid

CAS #:

376-06-7



MOLECULAR FORMULA:

C, HF, O,

MOLECULAR WEIGHT:

714.11

CONCENTRATION:

 $50 \pm 2.5 \, \mu g/ml$

SOLVENT(S):

Methanol

Water (<1%)

CHEMICAL PURITY:

>98%

LAST TESTED: (mm/dd/yyyy)

12/09/2015

EXPIRY DATE: (mm/dd/yyyy)

12/09/2020

RECOMMENDED STORAGE:

Store ampoule in a cool, dark place

DOCUMENTATION/ DATA ATTACHED:

Figure 1: LC/MS Data (TiC and Mass Spectrum)

Figure 2: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

See page 2 for further details.

Contains 4 mole eq. of NaOH to prevent conversion of the carboxylic acid to the methyl ester.

Contains $\sim 0.2\%$ of PFDoA (C₁₅HF₂₈O₂) and $\sim 0.2\%$ of PFPeDA (C₁₅HF₂₈O₂).

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By:

Wellington Laboratories Inc., 345 Southgate Dr. Guelph ON N1G 3M5 CANADA 519-822-2436 • Fax: 519-822-2849 • info@well-labs.com

INTENDED USE:

The products prepared by Wellington Laboratories Inc. are for laboratory use only. This certified reference material (CRM) was designed to be used as a standard for the identification and/or quantification of the specific chemical compound it contains.

HAZARDS:

This product should only be used by qualified personnel familiar with its potential hazards and trained in the handling of hazardous chemicals. Due care should be exercised to prevent unnecessary human contact or ingestion. All procedures should be carried out in a well-functioning fume hood and suitable gloves, eye protection, and clothing should be worn at all times. Waste should be disposed of according to national and regional regulations. Safety Data Sheets (SDSs) are available upon request.

SYNTHESIS / CHARACTERIZATION:

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 $X_1, X_2, ..., X_n$ on which it depends is:

$$u_c(y(x_1, x_2, ...x_n)) = \sqrt{\sum_{i=1}^n u(y, x_i)^2}$$

where x is expressed as a relative standard uncertainty of the individual parameter.

The individual uncertainties taken into account include those associated with weights (calibration of the balance) and volumes (calibration of the volumetric glassware). An expanded maximum combined percent relative uncertainty of $\pm 5\%$ (calculated with a coverage factor of 2 and a level of confidence of 95%) is stated on the Certificate of Analysis for all of our products.

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EXPIRY DATE / PERIOD OF VALIDITY:

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LIMITED WARRANTY:

At the time of shipment, all products are warranted to be free of defects in material and workmanship and to conform to the stated technical and purity specifications.

QUALITY MANAGEMENT:

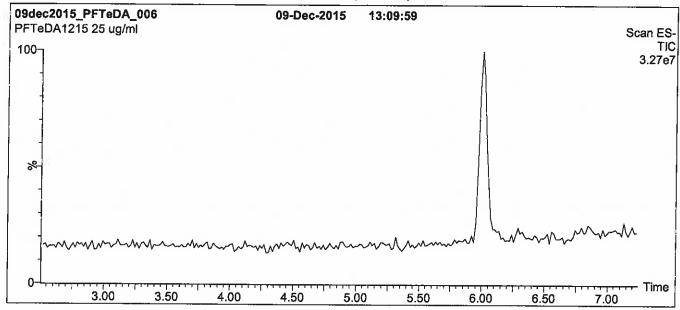
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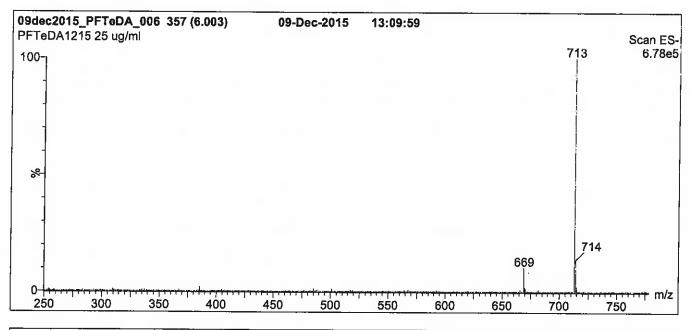




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Figure 1: PFTeDA; LC/MS Data (TIC and Mass Spectrum)





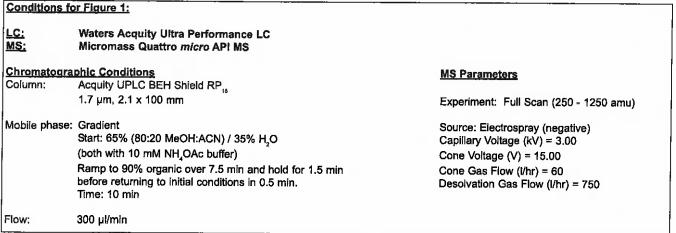
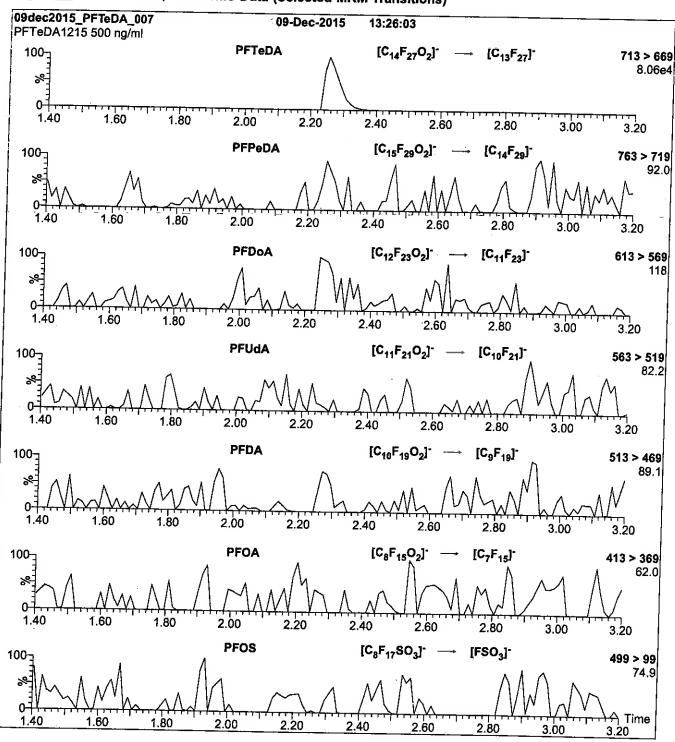
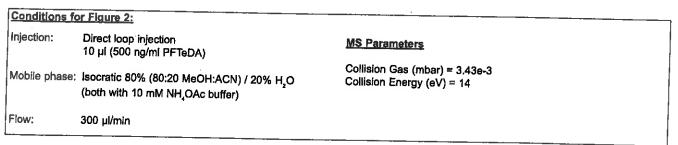


Figure 2: PFTeDA; LC/MS/MS Data (Selected MRM Transitions)





Reagent

LCPFTeDA_00007



CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE:

PFTeDA

LOT NUMBER:

PFTeDA0916

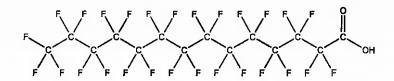
COMPOUND:

Perfluoro-n-tetradecanoic acid

STRUCTURE:

CAS #:

376-06-7



MOLECULAR FORMULA:

C14HF27O2

MOLECULAR WEIGHT:

714.11 Methanol

CONCENTRATION:

50 ± 2.5 µg/ml

SOLVENT(S):

Water (<1%)

CHEMICAL PURITY:

>98%

LAST TESTED: (mm/dd/yyyy)

09/30/2016

EXPIRY DATE: (mm/dd/yyyy)

09/30/2021

RECOMMENDED STORAGE:

Store ampoule in a cool, dark place

DOCUMENTATION/ DATA ATTACHED:

Figure 1: LC/MS Data (TIC and Mass Spectrum)

Figure 2: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

See page 2 for further details.

Contains 4 mole eq. of NaOH to prevent conversion of the carboxylic acid to the methyl ester.

Contains ~ 0.2% of PFDoA ($C_{19}HF_{23}O_{2}$) and ~ 0.2% of PFPeDA ($C_{15}HF_{29}O_{2}$).

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By:

Date: 10/05/2016

Wellington Laboratories Inc., 345 Southgate Dr. Guelph ON N1G 3M5 CANADA 519-822-2436 • Fax: 519-822-2849 • info@well-labs.com

INTENDED USE:

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SYNTHESIS / CHARACTERIZATION:

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HOMOGENEITY:

Prior to solution preparation, crystalline material is tested for homogeneity using a variety of techniques (as stated above) and its solubility in a given diluent is taken into consideration. Duplicate solutions of a new product are prepared from the same crystalline lot and, after the addition of an appropriate internal standard, they are compared by GC/MS, LC/MS/MS and/or SFC/UV/MS/MS. The relative response factors of the analyte of interest in each solution are required to be <5% RSD. New solution lots of existing products are compared to older lots in the same manner, which further confirms the homogeneity of the crystalline material as well as the stability and homogeneity of the solutions in the storage containers.

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$$x_1, x_2,...x_n$$
 on which it depends is:

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TRACEABILITY:

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EXPIRY DATE / PERIOD OF VALIDITY:

Ongoing stability studies of this product have demonstrated stability in its composition and concentration, until the specified expiry date, in the unopened ampoule. Monitoring for any degradation or change in concentration of the listed analyte(s) is performed on a routine basis.

LIMITED WARRANTY:

At the time of shipment, all products are warranted to be free of defects in material and workmanship and to conform to the stated technical and purity specifications.

QUALITY MANAGEMENT:

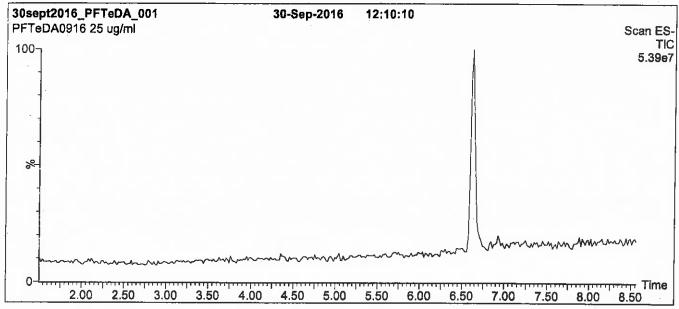
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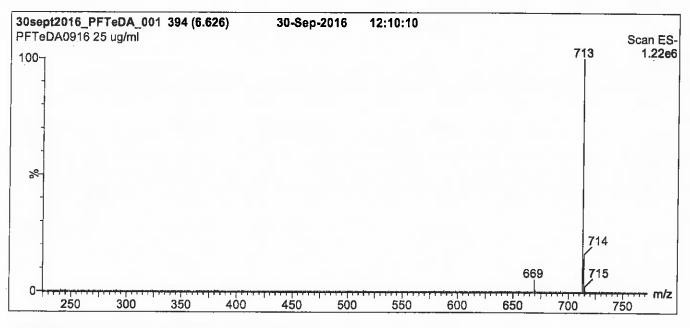




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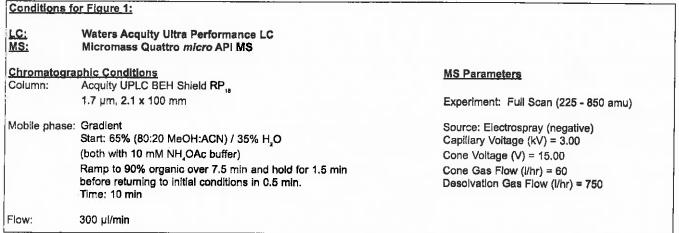
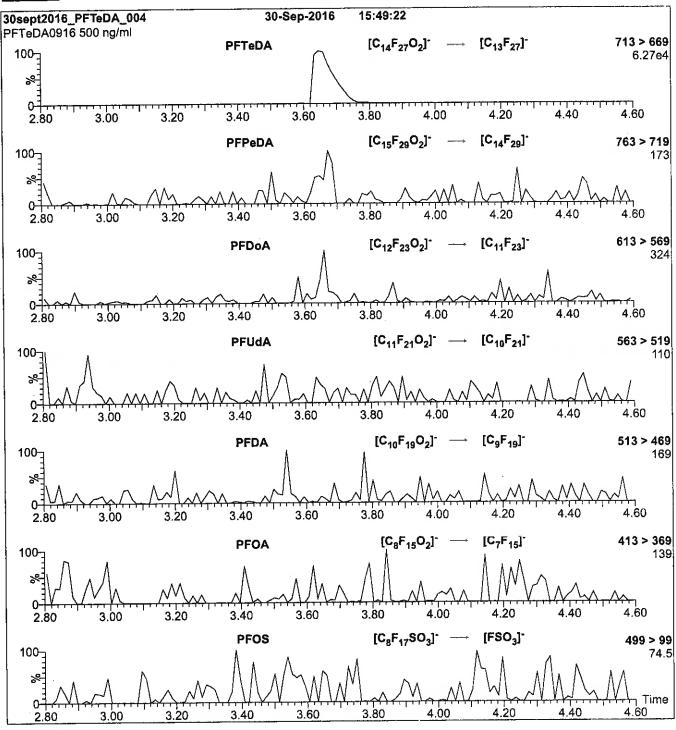
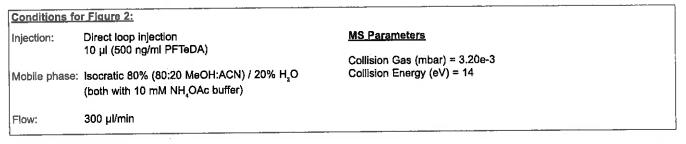


Figure 2: PFTeDA; LC/MS/MS Data (Selected MRM Transitions)





Reagent

LCPFTrDA_00005



ID: LCPFTrDA_00005 Exp: 02/12/21 Prpd: SBC PF-n-tridecanoic acid







VELLINGTON ABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE:

PFTrDA

LOT NUMBER:

PFTrDA0216

COMPOUND:

STRUCTURE:

Perfluoro-n-tridecanoic acid

CAS #:

72629-94-8

MOLECULAR FORMULA:

CONCENTRATION:

C13HF25O2

 $50 \pm 2.5 \,\mu g/ml$

MOLECULAR WEIGHT:

SOLVENT(S):

664.11

Methanol

Water (<1%)

CHEMICAL PURITY:

>98%

LAST TESTED: (mm/ddi/yyyy)

02/12/2016

EXPIRY DATE: (mm/dd/yyyy)

02/12/2021

RECOMMENDED STORAGE:

Store ampoule in a cool, dark place

DOCUMENTATION/ DATA ATTACHED:

Figure 1: LC/MS Data (TIC and Mass Spectrum)

Figure 2: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

See page 2 for further details.

Contains 4 mole eq. of NaOH to prevent conversion of the carboxylic acid to the methyl ester.

Contains ~ 0.1% of PFUdA ($C_{11}HF_{21}O_2$), ~ 0.4% of PFDoA ($C_{12}HF_{23}O_2$), and ~ 0.1% of PFTeDA (C₁₄HF₂₇O₂).

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By:

Date: <u>02/16/2016</u>

Wellington Laboratories Inc., 345 Southgate Dr. Guelph ON N1G 3M5 CANADA 519-822-2436 • Fax: 519-822-2849 • info@well-labs.com

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QUALITY MANAGEMENT:

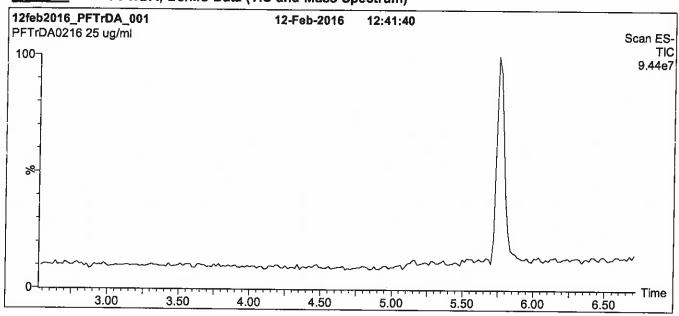
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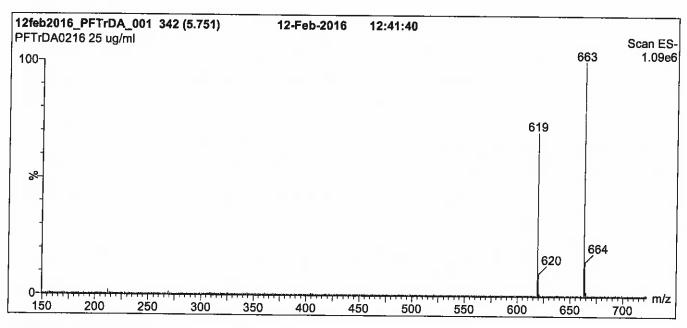




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Figure 1: PFTrDA; LC/MS Data (TIC and Mass Spectrum)





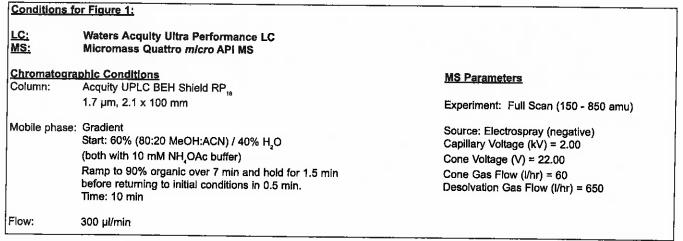
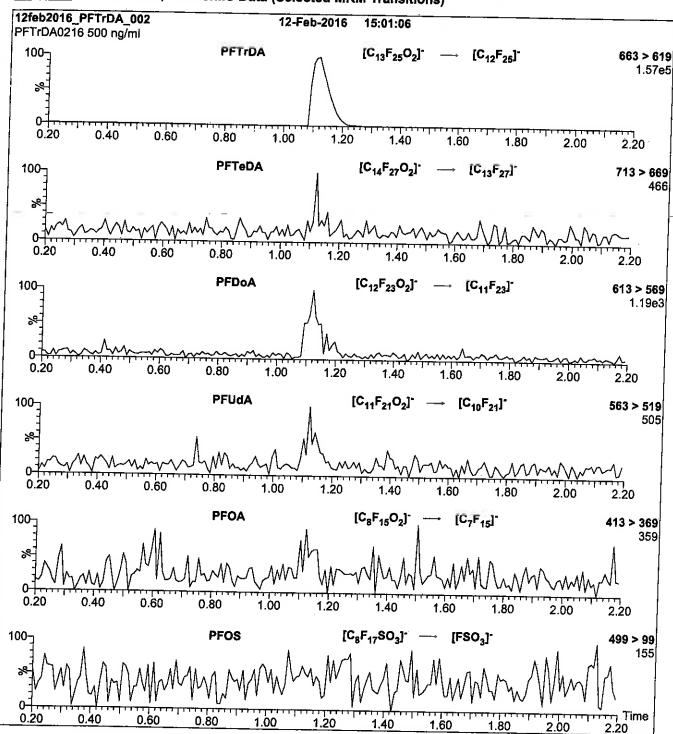


Figure 2: PFTrDA; LC/MS/MS Data (Selected MRM Transitions)





Injection:

Direct loop injection

10 μl (500 ng/ml PFTrDA)

Mobile phase: Isocratic 80% MeOH / 20% H₂O

Flow:

300 µl/min

MS Parameters

Collision Gas (mbar) = 3.35e-3 Collision Energy (eV) = 15

Reagent

LCPFTrDA_00007



CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE:

PFTrDA

LOT NUMBER:

PFTrDA0216

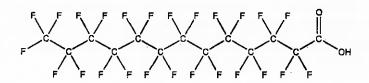
COMPOUND:

Perfluoro-n-tridecanoic acid

STRUCTURE:

CAS #:

72629-94-8



MOLECULAR FORMULA:

C, HF, O,

MOLECULAR WEIGHT:

664.11

CONCENTRATION:

50 ± 2.5 µg/ml

SOLVENT(S):

Methanol Water (<1%)

CHEMICAL PURITY:

>98%

LAST TESTED: (mm/dd/yyyy)

02/12/2016

EXPIRY DATE: (mm/dd/yyyy)

02/12/2021

RECOMMENDED STORAGE:

Store ampoule in a cool, dark place

DOCUMENTATION/ DATA ATTACHED:

Figure 1: LC/MS Data (TIC and Mass Spectrum)

Figure 2: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

See page 2 for further details.

Contains 4 mole eq. of NaOH to prevent conversion of the carboxylic acid to the methyl ester.

• Contains ~ 0.1% of PFUdA ($C_{11}HF_{21}O_{2}$), ~ 0.4% of PFDoA ($C_{12}HF_{23}O_{2}$), and ~ 0.1% of PFTeDA ($C_{14}HF_{27}O_{2}$).

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By:

R.G. Chittim

Date: <u>02/16</u>/

Wellington Laboratories Inc., 345 Southgate Dr. Guelph ON N1G 3M5 CANADA 519-822-2436 • Fax: 519-822-2849 • info@well-labs.com

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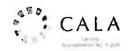
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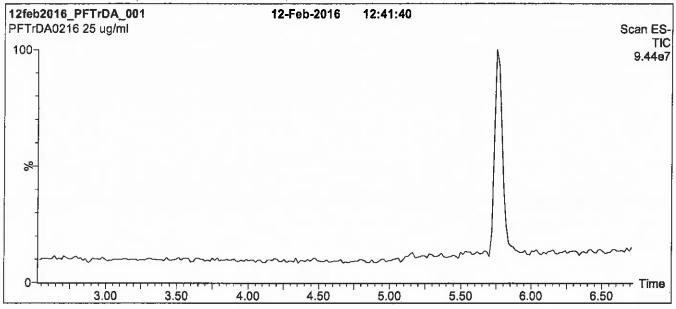
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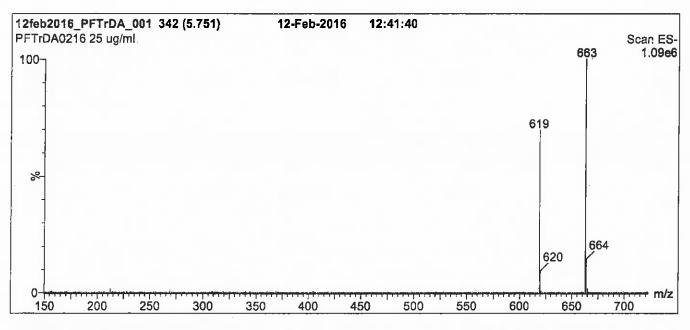




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Figure 1: PFTrDA; LC/MS Data (TIC and Mass Spectrum)





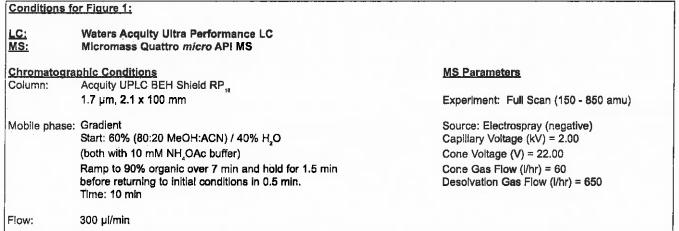
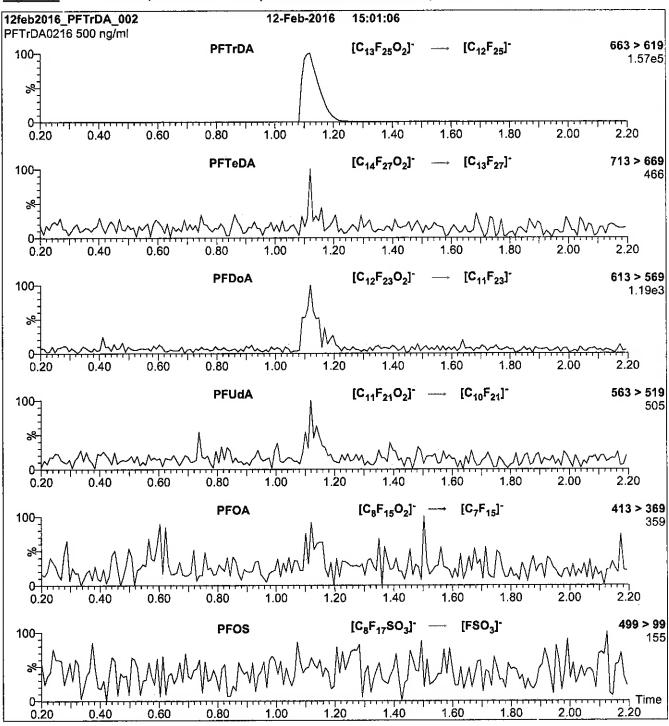
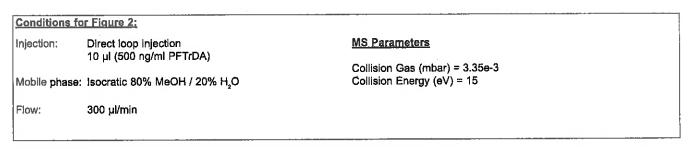


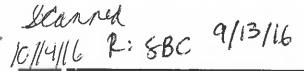
Figure 2: PFTrDA; LC/MS/MS Data (Selected MRM Transitions)





Reagent

LCPFUdA_00006





ID: LCPFUdA_00005

Exp: 08/19/20 Prpd: SBC

PF-ri-undecanoic acid







CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE:

PFUdA

LOT NUMBER:

PFUdA0815

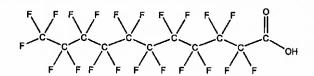
COMPOUND:

Perfluoro-n-undecanoic acid

STRUCTURE:

CAS #:

2058-94-8



MOLECULAR FORMULA:

C, HF, O,

MOLECULAR WEIGHT:

564.09

CONCENTRATION:

50 ± 2.5 µg/ml

SOLVENT(S):

Methanol

Water (<1%)

CHEMICAL PURITY:

>98%

LAST TESTED: (mm/dd/yyyy)

08/19/2015

EXPIRY DATE: (mm/dd/yyyy)

08/19/2020

RECOMMENDED STORAGE:

Store ampoule in a cool, dark place

DOCUMENTATION/ DATA ATTACHED:

Figure 1: LC/MS Data (TIC and Mass Spectrum)

Figure 2: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

See page 2 for further details.

Contains 4 mole eq. of NaOH to prevent conversion of the carboxylic acid to the methyl ester.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By:

B.G. Chittim

Date:

08/21/2015

Wellington Laboratories Inc., 345 Southgate Dr. Guelph ON N1G 3M5 CANADA 519-822-2436 • Fax: 519-822-2849 • info@well-labs.com

INTENDED USE:

The products prepared by Wellington Laboratories Inc. are for laboratory use only. This certified reference material (CRM) was designed to be used as a standard for the identification and/or quantification of the specific chemical compound it contains.

HAZARDS:

This product should only be used by qualified personnel familiar with its potential hazards and trained in the handling of hazardous chemicals. Due care should be exercised to prevent unnecessary human contact or ingestion. All procedures should be carried out in a well-functioning fume hood and suitable gloves, eye protection, and clothing should be worn at all times. Waste should be disposed of according to national and regional regulations. Safety Data Sheets (SDSs) are available upon request.

SYNTHESIS / CHARACTERIZATION:

Where possible, all of our products are synthesized using single-product unambiguous routes. They are then characterized, and their structures and purities confirmed, using a combination of the most relevant techniques, such as NMR, GC/MS, LC/MS/MS, SFC/UV/MS/MS, x-ray crystallography, and melting point. Isotopic purities of mass-labelled compounds are also confirmed using HRGC/HRMS and/or LC/MS/MS.

HOMOGENEITY:

Prior to solution preparation, crystalline material is tested for homogeneity using a variety of techniques (as stated above) and its solutility in a given diluent is taken into consideration. Duplicate solutions of a new product are prepared from the same crystalline lot and, after the addition of an appropriate internal standard, they are compared by GC/MS, LC/MS/MS and/or SFC/UV/MS/MS. The relative response factors of the analyte of interest in each solution are required to be <5% RSD. New solution lots of existing products are compared to older lots in the same manner, which further confirms the homogeneity of the crystalline material as well as the stability and homogeneity of the solutions in the storage containers.

UNCERTAINTY:

The maximum combined relative standard uncertainty of our reference standard solutions is calculated using the following equation:

The combined relative standard uncertainty, $u_{c}(y)$, of a value y and the uncertainty of the independent parameters

 $x_1, x_2, ... x_n$ on which it depends is:

$$u_c(y(x_1, x_2, ...x_n)) = \sqrt{\sum_{i=1}^n u(y, x_i)^2}$$

where x is expressed as a relative standard uncertainty of the individual parameter.

The individual uncertainties taken into account include those associated with weights (calibration of the balance) and volumes (calibration of the volumetric glassware). An expanded maximum combined percent relative uncertainty of $\pm 5\%$ (calculated with a coverage factor of 2 and a level of confidence of 95%) is stated on the Certificate of Analysis for all of our products.

TRACEABILITY:

All reference standard solutions are traceable to specific crystalline lots. The microbalances used for solution preparation are regularly tested by an external ISO/IEC 17025 accredited calibration company. In addition, their calibration is verified prior to each weighing using NIST and/or NRC traceable external weights. All volumetric glassware used is of Class A tolerance and has been tested according to the appropriate ASTM procedures, which are ultimately traceable to NIST. For certain products, traceability to international interlaboratory studies has also been established.

EXPIRY DATE / PERIOD OF VALIDITY:

Ongoing stability studies of this product have demonstrated stability in its composition and concentration, until the specified expiry date, in the unopened ampoule. Monitoring for any degradation or change in concentration of the listed analyte(s) is performed on a routine basis.

LIMITED WARRANTY:

At the time of shipment, all products are warranted to be free of defects in material and workmanship and to conform to the stated technical and purity specifications.

QUALITY MANAGEMENT:

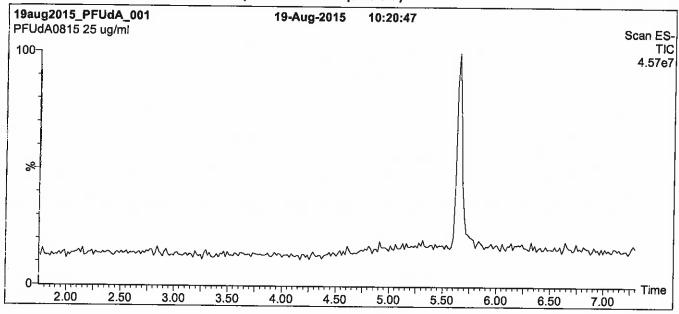
This product was produced using a Quality Management System registered to the latest versions of ISO 9001 by SAI Global, ISO/IEC 17025 by the Canadian Association for Laboratory Accreditation Inc. (CALA; A 1226), and ISO GUIDE 34 by ANSI-ASQ National Accreditation Board (ANAB; AR-1523).

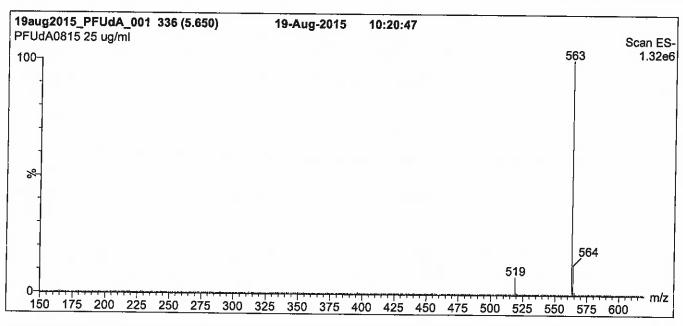




For additional information or assistance concerning this or any other products from Wellington Laboratories Inc., please visit our website at www.well-labs.com or contact us directly at info@well-labs.com

Figure 1: PFUdA; LC/MS Data (TIC and Mass Spectrum)





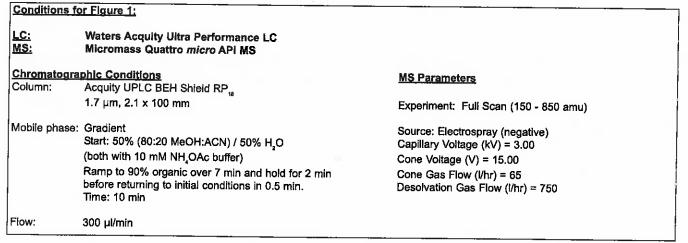
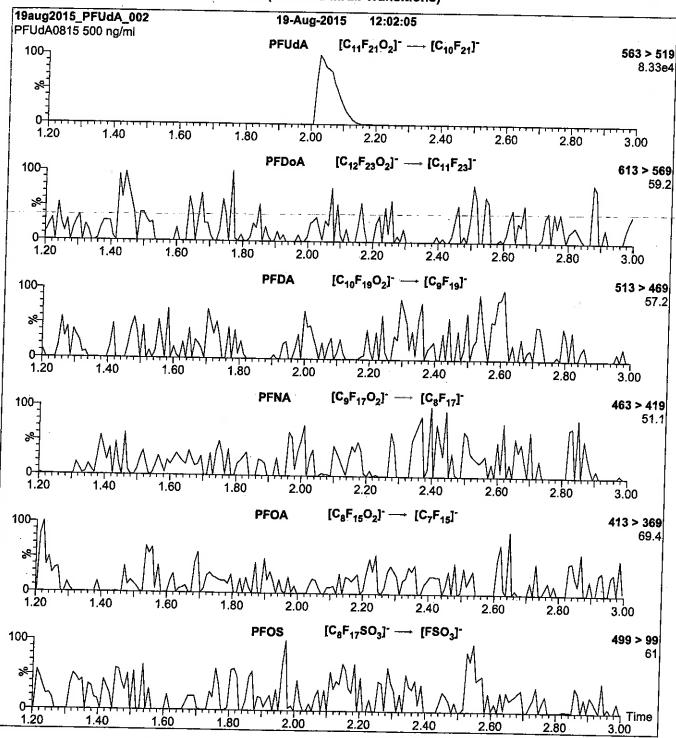
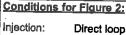


Figure 2: PFUdA; LC/MS/MS Data (Selected MRM Transitions)





Direct loop injection 10 µl (500 ng/ml PFUdA)

Mobile phase: Isocratic 80% (80:20 MeOH:ACN) / 20% H₂O

(both with 10 mM NH,OAc buffer)

Flow: 300 µl/min

MS Parameters

Collision Gas (mbar) = 3.31e-3 Collision Energy (eV) = 11

Method PFC DOD

Perfluronated Hydrocarbons (LC/MS) by Method PFC_DOD

Lab Name: TestAmerica Sacramento Jo	b No.:	320-29732-1
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SDG No.:

Matrix: Water Level: Low

GC Column (1): GeminiC18 3 ID: 3 (mm)

Client Sample ID	Lab Sample ID	PFBA #	PFPeA #	PFHxA #	PFHpA #	PFHxS #	PFOA #	PFNA #	PFOS #
TP-PFC-019-TPE-D	320-29732-4	96	98	98	118	106	111	91	100
	MB 320-174599/1-A	113	112	115	148	111	136	123	105
	LCS 320-174599/2-A	100	101	102	135	97	119	109	93
	LCSD 320-174599/3-A	97	101	105	132	97	125	111	96

	QC LIMITS
PFBA = 13C4 PFBA	25-150
PFPeA = 13C5 PFPeA	25-150
PFHxA = 13C2 PFHxA	25-150
PFHpA = 13C4-PFHpA	25-150
PFHxS = 1802 PFHxS	25-150
PFOA = 13C4 PFOA	25-150
PFOS = 13C4 PFOS	25-150
PFNA = 13C5 PFNA	25-150

Column to be used to flag recovery values

Lab Name: TestAmerica Sacramento Job No.: 320-29	132	<u>'</u> –	- :	1
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SDG No.:

Matrix: Water Level: Low

GC Column (1): GeminiC18 3 ID: 3 (mm)

Client Sample ID	Lab Sample ID	PFDA #	PFOSA #	PFUnA #	PFDoA #
TP-PFC-019-TPE-D	320-29732-4	85	0.3 Ç	67	70
	MB 320-174599/1-A	138	47	137	114
	LCS 320-174599/2-A	126	17 Ç	110	97
	LCSD 320-174599/3-A	128	20 Ç	117	101

 $\ensuremath{\text{\#}}$ Column to be used to flag recovery values

Lab Name: TestAmerica Sacramento Jo	b No.:	320-29732-1
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SDG No.:

Matrix: Water Level: Low

GC Column (1): GeminiC18 3 ID: 3 (mm)

Client Sample ID	Lab Sample ID	PFBA #	PFPeA #	PFHxA #	PFHpA #	PFHxS #	PFOA #	PFNA #	PFOS #
TP-PFC-019-TPI	320-29732-1	77	80	71	93	87	67	66	83
TP-PFC-019-TPI DL	320-29732-1 DL	98	95	94	105	96	88	77	82
TP-PFC-019-MID-CAR BON	320-29732-2	101	102	100	116	102	102	81	99
TP-PFC-019-TPE	320-29732-3	102	98	101	118	105	102	85	102
	MB 320-175097/1-A	103	105	100	114	96	110	102	93
	LCS 320-175097/2-A	101	102	100	119	101	113	98	94
	LCSD 320-175097/3-A	111	104	105	124	108	116	105	95

	QC LIMITS
PFBA = 13C4 PFBA	25-150
PFPeA = 13C5 PFPeA	25-150
PFHxA = 13C2 PFHxA	25-150
PFHpA = 13C4-PFHpA	25-150
PFHxS = 1802 PFHxS	25-150
PFOA = 13C4 PFOA	25-150
PFOS = 13C4 PFOS	25-150
PFNA = 13C5 PFNA	25-150

 $\ensuremath{\text{\#}}$ Column to be used to flag recovery values

Lab Name: TestAmerica Sacramento Job No.: 320-29732	2-	-	1
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SDG No.:

Matrix: Water Level: Low

GC Column (1): GeminiC18 3 ID: 3 (mm)

Client Sample ID	Lab Sample ID	PFOSA	#	PFDA ‡	PFUnA #	PFDoA #
TP-PFC-019-TPI	320-29732-1	14	Q	65	48	45
TP-PFC-019-TPI DL	320-29732-1 DL	15	Q	62	54	47
TP-PFC-019-MID-CAR BON	320-29732-2	6	Q	72	63	58
TP-PFC-019-TPE	320-29732-3	2	Q	93	78	69
	MB 320-175097/1-A	51		118	98	84
	LCS 320-175097/2-A	7	Q	120	104	86
	LCSD 320-175097/3-A	25		128	104	94

 $\ensuremath{\text{\#}}$ Column to be used to flag recovery values

Lab Name: TestAmerica Sacramento Job No.: 320-297	32-	_	1
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SDG No.:

Matrix: Water Level: Low

GC Column (1): $\underline{\text{GeminiC18 3}}$ ID: $\underline{3}$ (mm)

Client Sample ID	Lab Sample ID	PFDoA #
TP-PFC-019-TPI RE	320-29732-1 RE	67
TP-PFC-019-MID-CAR BON RE	320-29732-2 RE	92
TP-PFC-019-TPE RE	320-29732-3 RE	87
	MB 320-175074/1-A	116
	LCS 320-175074/2-A	105
	LCSD 320-175074/3-A	106

 $\frac{\text{QC LIMITS}}{25-150}$

PFDoA = 13C2 PFDoA

Lab Name: TestAmerica Sacramento Job No.: 320-2973
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SDG No.:

Matrix: Water Level: Low

GC Column (1): GeminiC18 3 ID: 3 (mm)

Client Sample ID	Lab Sample ID	PFOSA	#
TP-PFC-019-TPE-D RE	320-29732-4 RE	2	Q
	MB 320-175742/1-A	63	
	LCS 320-175742/2-A	62	
	LCSD 320-175742/3-A	55	

 $\frac{QC LIMITS}{25-150}$

PFOSA = 13C8 FOSA

FORM III LCMS LAB CONTROL SAMPLE RECOVERY

Lab Name	e: TestAmerica Sacr	amento	Job No.:	320-	-29732-1
SDG No.	:				
Matrix:	Water	Level: Low	Lab File	ID:	2017.07.21c_017.d
Lab ID:	LCS 320-174599/2-A		Client II):	

	SPIKE	LCS	LCS	QC	
	ADDED	CONCENTRATION	용	LIMITS	#
COMPOUND	(ng/L)	(ng/L)	REC	REC	
Perfluorobutanoic acid (PFBA)	40.0	44.8	112	60-140	
Perfluoropentanoic acid	40.0	42.2	106	60-140	
(PFPeA)					
Perfluorohexanoic acid (PFHxA)	40.0	42.7	107	60-140	
Perfluoroheptanoic acid	40.0	40.6	102	60-140	
(PFHpA)					
Perfluorooctanoic acid (PFOA)	40.0	42.1	105		
Perfluorononanoic acid (PFNA)	40.0	42.6	106		
Perfluorodecanoic acid (PFDA)	40.0	43.8	110	60-140	
Perfluoroundecanoic acid	40.0	43.8	109	60-140	
(PFUnA)					
Perfluorododecanoic acid	40.0	43.5	109	60-140	
(PFDoA)					
Perfluorotridecanoic Acid	40.0	43.4	109	50-150	
(PFTriA)	10.0	40.6	100	F0 1F0	
Perfluorotetradecanoic acid	40.0	48.6	122	50-150	
(PFTeA) Perfluorobutanesulfonic acid	35.4	38.5	109	50-150	
(PFBS)	33.4	30.3	109	30-130	
Perfluorohexanesulfonic acid	36.4	38.9	107	60-140	
(PFHxS)	30.1	30.		00 110	
Perfluoroheptanesulfonic Acid	38.1	44.7	117	50-150	
(PFHpS)					
Perfluorooctanesulfonic acid	37.1	40.0	108	60-140	
(PFOS)					
Perfluorodecanesulfonic acid	38.6	39.6	103	50-150	
(PFDS)					
Perfluorooctane Sulfonamide	40.0	42.9	107	60-140	
(FOSA) 13C8 FOSA	100	17.3	17	25-150	0
13C4 PFBA	100	99.7	100		Q
13C2 PFHxA	100	102	102	25-150	
13C4 PFOA	100	119	119	25-150	
13C5 PFNA	100	109	109	25-150	
13C2 PFDA	100	126	126	25-150	
13C2 PFUnA	100	110	110		
13C2 PFDoA	100	96.6	97	25-150	
1802 PFHxS	94.6	91.8	97	25-150	
13C4 PFOS	95.6	89.3	93	25-150	
13C4-PFHpA	100	135	135	25-150	
13C5 PFPeA	100	101	101	25-150	

[#] Column to be used to flag recovery and RPD values FORM III 537 (Modified)

FORM III LCMS LAB CONTROL SAMPLE RECOVERY

Lab Name	e: TestAmerica Sacra	amento	Job No.:	320-	-29732-1
SDG No.	:				
Matrix:	Water	Level: Low	Lab File	ID:	2017.07.25B_003.d
Lab ID:	LCS 320-175074/2-A		Client I	D:	

	SPIKE ADDED	LCS CONCENTRATION	LCS	QC LIMITS	#
COMPOUND	(ng/L)	(ng/L)	REC	REC	
Perfluorotetradecanoic acid (PFTeA)	40.0	58.6	146	50-150	
13C2 PFDoA	100	105	105	25-150	

[#] Column to be used to flag recovery and RPD values FORM III 537 (Modified)

FORM III LCMS LAB CONTROL SAMPLE RECOVERY

Lab Nam	e: <u>TestAmerica Sacr</u>	amento	Job No.:	320-29732-1
SDG No.	:			
Matrix:	Water	Level: Low	Lab File	ID: 2017.07.23A_003.d
Lab ID:	LCS 320-175097/2-A		Client ID	:

ADDED CONCENTRATION REC REC		SPIKE	LCS	LCS	QC	
Perfluorobutanoic acid (PFBA) 40.0 43.9 110 60-140		ADDED	CONCENTRATION	ુ		#
Perfluoropentanoic acid 40.0 40.4 101 60-140 (PFFEA)	COMPOUND	(ng/L)	(ng/L)	REC	REC	
Perfluorohexanoic acid (PFHXA)	Perfluorobutanoic acid (PFBA)			110	60-140	
Perfluorohexanoic acid (PFHxA)	Perfluoropentanoic acid	40.0	40.4	101	60-140	
Perfluoroheptanoic acid 40.0 42.1 105 60-140 (PFFBA) Perfluorocotanoic acid (PFOA) 40.0 39.8 100 60-140 Perfluorononanoic acid (PFNA) 40.0 42.2 105 60-140 Perfluorodecanoic acid (PFDA) 40.0 42.2 105 60-140 Perfluoroundecanoic acid (PFDA) 40.0 42.6 107 60-140 Perfluoroundecanoic acid (PFDA) 40.0 41.4 104 60-140 (PFUNA) 40.0 41.4 104 60-140 (PFUNA) 40.0 40.3 116 60-140 (PFDA) 40.0 40.3 116 60-140 (PFDA) 40.0 40.3 116 60-140 (PFDA) 40.0 40	- /					
Perfluoronanoic acid (PFOA)	•	40.0	41.9			
Perfluorononanoic acid (PFNA) 40.0 42.2 105 60-140	(PFHpA)	40.0				
Perfluorodecanoic acid (PFDA) 40.0 42.6 107 60-140	Perfluorooctanoic acid (PFOA)	40.0		100		
Perfluoroundecanoic acid	Perfluorononanoic acid (PFNA)	40.0				
Perfluorododecanoic acid 40.0 46.3 116 60-140 (PFDOA) Perfluorotridecanoic Acid 40.0 54.0 135 50-150 (PFTriA) Perfluorobutanesulfonic acid 35.4 39.2 111 50-150 (PFBS) Perfluorohexanesulfonic acid 36.4 35.8 98 60-140 (PFHxS) Perfluorohexanesulfonic Acid 38.1 44.5 117 50-150 (PFHxS) Perfluoroctanesulfonic Acid 37.1 38.2 103 60-140 (PFHS) Perfluorodecanesulfonic acid 37.1 38.2 103 60-140 (PFOS) Perfluorodecanesulfonic acid 38.6 42.5 110 50-150 (PFDS) Perfluoroctane Sulfonamide 40.0 43.1 108 60-140 (POSA) 1308 FOSA 100 6.86 7 25-150 20 1304 PFDA 100 101 101 25-150 1302 PFDA 100 113 113 25-150 1302 PFDA 100 97.6 98 25-150 1302 PFDA 100 104 104 25-150 1302 PFDA 100 100 104 104 25-150 1302 PFDA 100 100 104 104 25-150 1302 PFDA 100 85.8 86 25-150 1302 PFDA 100 85.8 86 25-150 1304 PFOS 94.6 95.7 101 25-150 1304 PFOS 95.6 89.9 94 25-150 1304 PFOS 1304 PFOS 95.6 89.9 94 25-150 1304 PFOS 1304 PFOS 100 119 119 25-150 1304 PFOS 1304 PFOS 100		40.0	42.6			
Perfluorotridecanoic Acid 40.0 54.0 135 50-150		40.0	41.4	104	60-140	
Perfluorotridecanoic Acid (PFTriA)		40.0	46.3	116	60-140	
Perfluorobutanesulfonic acid (PFBS) 35.4 39.2 111 50-150 (PFBS) 25-150 (PFBS) 25-150 (Perfluorotridecanoic Acid	40.0	54.0	135	50-150	
(PFHxS) 2 38.1 44.5 117 50-150 (PFHpS) 38.1 44.5 117 50-150 Perfluorooctanesulfonic acid (PFOS) 38.6 42.5 110 50-150 Perfluorooctane Sulfonamide (FOSA) 40.0 43.1 108 60-140 13C8 FOSA 100 6.86 7 25-150 Q 13C4 PFBA 100 101 101 25-150 100 102 25-150 100 103 25-150 100 103 25-150 100 100 25-150 100 100 25-150 100 100 100 25-150 100		35.4	39.2	111	50-150	
Perfluoroheptanesulfonic Acid (PFHpS) Perfluorooctanesulfonic acid (PFHpS)		36.4	35.8	98	60-140	
Perfluorooctanesulfonic acid (PFOS) 37.1 38.2 103 60-140 Perfluorodecanesulfonic acid (PFDS) 38.6 42.5 110 50-150 Perfluorooctane Sulfonamide (FOSA) 40.0 43.1 108 60-140 13C8 FOSA 100 6.86 7 25-150 Q 13C4 PFBA 100 101 101 25-150 13C2 PFHxA 100 100 100 25-150 13C4 PFOA 100 97.6 98 25-150 13C2 PFDA 100 97.6 98 25-150 13C2 PFDA 100 104 104 25-150 13C2 PFDA 100 104 104 25-150 13C2 PFDA 100 85.8 86 25-150 13C4 PFOS 95.7 101 25-150 13C4-PFHpA 100 119 119 25-150	Perfluoroheptanesulfonic Acid	38.1	44.5	117	50-150	
(PFDS) 40.0 43.1 108 60-140 (FOSA) 1308 FOSA 100 6.86 7 25-150 Q 13C4 PFBA 100 101 101 25-150 100 100 25-150 100 100 25-150 100 113 113 25-150 113 113 25-150 113 113 25-150 113 113 25-150 113 113 25-150 113 113 25-150 113 113 25-150 113 113 25-150 114 104 104 104 104 104 25-150 115 <td>Perfluorooctanesulfonic acid</td> <td>37.1</td> <td>38.2</td> <td>103</td> <td>60-140</td> <td></td>	Perfluorooctanesulfonic acid	37.1	38.2	103	60-140	
(FOSA) 100 6.86 7 25-150 Q 13C4 PFBA 100 101 101 25-150 13C2 PFHXA 100 100 100 25-150 13C4 PFOA 100 113 113 25-150 13C5 PFNA 100 97.6 98 25-150 13C2 PFDA 100 120 120 25-150 13C2 PFUNA 100 104 104 25-150 13C2 PFDOA 100 85.8 86 25-150 1802 PFHXS 94.6 95.7 101 25-150 13C4 PFOS 95.6 89.9 94 25-150 13C4-PFHPA 100 119 119 25-150		38.6	42.5	110	50-150	
13C4 PFBA 100 101 101 25-150 13C2 PFHxA 100 100 100 25-150 13C4 PFOA 100 113 113 25-150 13C5 PFNA 100 97.6 98 25-150 13C2 PFDA 100 120 120 25-150 13C2 PFUnA 100 104 104 25-150 13C2 PFDOA 100 85.8 86 25-150 18O2 PFHxS 94.6 95.7 101 25-150 13C4 PFOS 95.6 89.9 94 25-150 13C4-PFHpA 100 119 119 25-150		40.0	43.1	108	60-140	
13C2 PFHxA 100 100 25-150 13C4 PFOA 100 113 113 25-150 13C5 PFNA 100 97.6 98 25-150 13C2 PFDA 100 120 120 25-150 13C2 PFUnA 100 104 104 25-150 13C2 PFDOA 100 85.8 86 25-150 18O2 PFHxS 94.6 95.7 101 25-150 13C4 PFOS 95.6 89.9 94 25-150 13C4-PFHpA 100 119 119 25-150	13C8 FOSA	100	6.86	7	25-150	Q
13C4 PFOA 100 113 113 25-150 13C5 PFNA 100 97.6 98 25-150 13C2 PFDA 100 120 120 25-150 13C2 PFUNA 100 104 104 25-150 13C2 PFDOA 100 85.8 86 25-150 18O2 PFHxS 94.6 95.7 101 25-150 13C4 PFOS 95.6 89.9 94 25-150 13C4-PFHpA 100 119 119 25-150	13C4 PFBA	100	101	101		
13C5 PFNA 100 97.6 98 25-150 13C2 PFDA 100 120 120 25-150 13C2 PFUnA 100 104 104 25-150 13C2 PFDOA 100 85.8 86 25-150 18O2 PFHxS 94.6 95.7 101 25-150 13C4 PFOS 95.6 89.9 94 25-150 13C4-PFHpA 100 119 119 25-150	13C2 PFHxA	100	100	100	25-150	
13C2 PFDA 100 120 25-150 13C2 PFUnA 100 104 104 25-150 13C2 PFDOA 100 85.8 86 25-150 18O2 PFHxS 94.6 95.7 101 25-150 13C4 PFOS 95.6 89.9 94 25-150 13C4-PFHpA 100 119 119 25-150	13C4 PFOA	100	113	113	25-150	
13C2 PFUnA 100 104 25-150 13C2 PFDoA 100 85.8 86 25-150 1802 PFHxS 94.6 95.7 101 25-150 13C4 PFOS 95.6 89.9 94 25-150 13C4-PFHpA 100 119 119 25-150	13C5 PFNA	100	97.6	98	25-150	
13C2 PFDOA 100 85.8 86 25-150 18O2 PFHxS 94.6 95.7 101 25-150 13C4 PFOS 95.6 89.9 94 25-150 13C4-PFHpA 100 119 119 25-150	13C2 PFDA	100	120	120	25-150	
1802 PFHxS 94.6 95.7 101 25-150 13C4 PFOS 95.6 89.9 94 25-150 13C4-PFHpA 100 119 119 25-150	13C2 PFUnA	100	104	104	25-150	
13C4 PFOS 95.6 89.9 94 25-150 13C4-PFHpA 100 119 119 25-150	13C2 PFDoA	100	85.8	86		
13C4-PFHpA 100 119 119 25-150	1802 PFHxS	94.6	95.7	101	25-150	
	13C4 PFOS	95.6	89.9	94	25-150	
13C5 PFPeA 100 102 102 25-150	13C4-PFHpA	100	119	119		
	13C5 PFPeA	100	102	102	25-150	

[#] Column to be used to flag recovery and RPD values FORM III 537 (Modified)

FORM III LCMS LAB CONTROL SAMPLE RECOVERY

Lab Nam	e: TestAmerica Sacr	amento	Job No.: 320)-29732-1
SDG No.	:			
Matrix:	Water	Level: Low	Lab File ID:	: 2017.07.27c_003.d
Lab ID:	LCS 320-175742/2-A		Client ID:	

	SPIKE ADDED	LCS CONCENTRATION	LCS %	QC LIMITS	#
COMPOUND	(ng/L)	(ng/L)	REC	REC	
Perfluorooctane Sulfonamide (FOSA)	40.0	44.4	111	60-140	
13C8 FOSA	100	62.0	62	25-150	

[#] Column to be used to flag recovery and RPD values FORM III 537 (Modified)

Lab Name	: TestAmerica Sac	cramento		Job	No.:	320-	-29732-1
SDG No.:							
Matrix:	Water	Level:	Low	Lab	File	ID:	2017.07.21c_018.d

Lab ID: LCSD 320-174599/3-A Client ID:

	SPIKE	LCSD	LCSD		QC LI	MITS	
	ADDED	CONCENTRATION	용	8 -			#
COMPOUND	(ng/L)	(ng/L)	REC	RPD	RPD	REC	
Perfluorobutanoic acid (PFBA)	40.0	47.2	118	5	30	60-140	
Perfluoropentanoic acid	40.0	43.9	110	4	30	60-140	
(PFPeA)							
Perfluorohexanoic acid (PFHxA)	40.0	42.9	107		30	60-140	
Perfluoroheptanoic acid	40.0	43.3	108	6	30	60-140	
(PFHpA)	4.0.0	40.0	100		2.0	60 140	
Perfluorooctanoic acid (PFOA)	40.0	42.9	107	2	30	60-140	
Perfluorononanoic acid (PFNA)	40.0	42.8	107	1	30	60-140	
Perfluorodecanoic acid (PFDA)	40.0	42.5	106		30	60-140	
Perfluoroundecanoic acid	40.0	40.6	101	8	30	60-140	
(PFUnA) Perfluorododecanoic acid	40.0	43.8	109	1	30	60-140	
(PFDoA)	40.0	43.0	109	1	30	80-140	
Perfluorotridecanoic Acid	40.0	46.6	117	7	30	50-150	
(PFTriA)							
Perfluorotetradecanoic acid	40.0	49.4	123	2	30	50-150	
(PFTeA)							
Perfluorobutanesulfonic acid	35.4	37.4	106	3	30	50-150	
(PFBS)	2.6.4	20.5	100		2.0	60 140	
Perfluorohexanesulfonic acid	36.4	38.5	106	1	30	60-140	
(PFHxS) Perfluoroheptanesulfonic Acid	38.1	41.6	109	7	30	50-150	
(PFHpS)	50.1	41.0		'	30	30 130	
Perfluorooctanesulfonic acid	37.1	39.2	106	2	30	60-140	
(PFOS)							
Perfluorodecanesulfonic acid	38.6	38.4	100	3	30	50-150	
(PFDS)							
Perfluorooctane Sulfonamide	40.0	43.3	108	1	30	60-140	
(FOSA) 13C8 FOSA	100	20.3	20			25-150	0
13C4 PFBA	100	97.0	97	-		25-150	Q
13C4 FFBA 13C2 PFHxA	100	105	105			25-150	
13C4 PFOA	100	125	125			25-150	
13C4 PFOA 13C5 PFNA	100	123	111			25-150	
13C3 PFNA 13C2 PFDA	100	128	128			25-150	
13C2 PFDA 13C2 PFUnA	100	128	128			25-150	
13C2 PFDoA	100	101	101 97			25-150	
1802 PFHxS	94.6		-			25-150	
13C4 PFOS	95.6	91.5	96			25-150	
13C4-PFHpA	100	132	132			25-150	
13C5 PFPeA	100	101	101			25-150	

[#] Column to be used to flag recovery and RPD values
FORM III 537 (Modified)

Lab Name	ab Name: TestAmerica Sacramento		Job No.: 320-29732-1					
SDG No.:	:							
Matrix:	Water	Level: Low	Lab File ID	: 2017.07.25B_004.d				
Lab ID:	LCSD 320-175074/3-	Α	Client ID:					

SPIKE	LCSD	LCSD		QC L1	IMITS	
ADDED	CONCENTRATION	용	용			#
(ng/L)	(ng/L)	REC	RPD	RPD	REC	
40.0	64.6	162	10	30	50-150	Q
100	106	106			25-150	
	ADDED (ng/L) 40.0	ADDED CONCENTRATION (ng/L) (ng/L) 64.6	ADDED CONCENTRATION % (ng/L) (ng/L) REC 40.0 64.6 162	ADDED CONCENTRATION % % (ng/L) (ng/L) REC RPD 40.0 64.6 162 10	ADDED CONCENTRATION % % (ng/L) (ng/L) REC RPD RPD 40.0 64.6 162 10 30	ADDED CONCENTRATION % % (ng/L) (ng/L) REC RPD RPD REC 40.0 64.6 162 10 30 50-150

[#] Column to be used to flag recovery and RPD values FORM III 537 (Modified)

Lab Name:	TestAmerica Sacr	ramento Jo	Job No.:		Job No.: 320-29/32-1					
SDG No.:										
Matrix: Wa	ater	Level: Low La	ab File	ID:	2017.07.23A	004.d				

Lab ID: LCSD 320-175097/3-A Client ID: 2017.07.23A_004.d

	SPIKE ADDED	LCSD CONCENTRATION	LCSD	96	QC LI	MITS	#
COMPOUND	(ng/L)	(ng/L)	REC	RPD	RPD	REC	#
Perfluorobutanoic acid (PFBA)	40.0	45.8	114	4	30	60-140	
Perfluoropentanoic acid (PFPeA)	40.0	43.1	108	6	30	60-140	
Perfluorohexanoic acid (PFHxA)	40.0	43.2	108	3	30	60-140	
Perfluoroheptanoic acid (PFHpA)	40.0	42.3	106		30	60-140	
Perfluorooctanoic acid (PFOA)	40.0	41.6	104		30	60-140	
Perfluorononanoic acid (PFNA)	40.0	40.9	102	- 1	30	60-140	
Perfluorodecanoic acid (PFDA)	40.0	39.8	100	I	30	60-140	
Perfluoroundecanoic acid (PFUnA)	40.0	42.6	107		30	60-140	
Perfluorododecanoic acid (PFDoA)	40.0	45.0	113	3	30	60-140	
Perfluorotridecanoic Acid (PFTriA)	40.0	48.6	122	10	30	50-150	
Perfluorobutanesulfonic acid (PFBS)	35.4	39.5	112	1	30	50-150	
Perfluorohexanesulfonic acid (PFHxS)	36.4	35.3	97	1	30	60-140	
Perfluoroheptanesulfonic Acid (PFHpS)	38.1	45.3	119	2	30	50-150	
Perfluorooctanesulfonic acid (PFOS)	37.1	41.3	111	8	30	60-140	
Perfluorodecanesulfonic acid (PFDS)	38.6	43.3	112	2	30	50-150	
Perfluorooctane Sulfonamide (FOSA)	40.0	44.6	112	3	30	60-140	
13C8 FOSA	100	25.1	25			25-150	
13C4 PFBA	100	111	111			25-150	
13C2 PFHxA	100	105	105			25-150	
13C4 PFOA	100	116	116			25-150	
13C5 PFNA	100	105	105			25-150	
13C2 PFDA	100	128	128			25-150	
13C2 PFUnA	100	104	104			25-150	
13C2 PFDoA	100	93.7	94			25-150	
1802 PFHxS	94.6	103	108			25-150	
13C4 PFOS	95.6	91.2	95			25-150	
13C4-PFHpA	100	124	124			25-150	
13C5 PFPeA	100	104	104			25-150	

[#] Column to be used to flag recovery and RPD values
FORM III 537 (Modified)

Lab Name: TestAmerica Sacramento		amento	Job No.: 3	20-29732-1
SDG No.	:			
Matrix:	Water	Level: Low	Lab File I	D: <u>2017.07.27</u> C_004.d
Lab ID:	LCSD 320-175742/3-	A	Client ID:	

	SPIKE	LCSD	LCSD		QC L1	IMITS	
	ADDED	CONCENTRATION	용	용			#
COMPOUND	(ng/L)	(ng/L)	REC	RPD	RPD	REC	
Perfluorooctane Sulfonamide (FOSA)	40.0	45.0	112	1	30	60-140	
13C8 FOSA	100	55.3	55			25-150	

[#] Column to be used to flag recovery and RPD values FORM III 537 (Modified)

Lab Name: TestAmerica Sacramento	Job No.: 320-29732-1
SDG No.:	
Lab File ID: 2017.07.21C_016.d	Lab Sample ID: MB 320-174599/1-A
Matrix: Water	Date Extracted: 07/18/2017 07:22
Instrument ID: A8_N	Date Analyzed: 07/21/2017 20:45
Level: (Low/Med) Low	

		LAB	
CLIENT SAMPLE ID	LAB SAMPLE ID	FILE ID	DATE ANALYZED
	LCS 320-174599/2-A	2017.07.21C	07/21/2017 20:52
		017.d	
	LCSD 320-174599/3-A	2017.07.21C	07/21/2017 20:59
		018.d	
TP-PFC-019-TPE-D	320-29732-4	2017.07.21C	07/21/2017 21:06
		019.d	

Lab Name: TestAmerica Sacramento	Job No.: 320-29732-1
SDG No.:	
Lab File ID: 2017.07.25B_002.d	Lab Sample ID: MB 320-175074/1-A
Matrix: Water	Date Extracted: 07/20/2017 09:15
Instrument ID: A8_N	Date Analyzed: 07/25/2017 14:17
Level: (Low/Med) Low	

		LAB	
CLIENT SAMPLE ID	LAB SAMPLE ID	FILE ID	DATE ANALYZED
	LCS 320-175074/2-A	2017.07.25B	07/25/2017 14:24
		003.d	
	LCSD 320-175074/3-A	2017.07.25B	07/25/2017 14:31
		004.d	
TP-PFC-019-TPI RE	320-29732-1 RE	2017.07.25B	07/25/2017 15:05
		009.d	
TP-PFC-019-MID-CARBON RE	320-29732-2 RE	2017.07.25B	07/25/2017 15:12
		010.d	
TP-PFC-019-TPE RE	320-29732-3 RE	2017.07.25B	07/25/2017 15:19
		011.d	

Lab Name: TestAmerica Sacramento	Job No.: 320-29732-1
SDG No.:	
Lab File ID: 2017.07.23A_002.d	Lab Sample ID: MB 320-175097/1-A
Matrix: Water	Date Extracted: 07/20/2017 10:13
Instrument ID: A8_N	Date Analyzed: 07/23/2017 14:39
Level:(Low/Med) Low	

		LAB	
CLIENT SAMPLE ID	LAB SAMPLE ID	FILE ID	DATE ANALYZED
	LCS 320-175097/2-A	2017.07.23A	07/23/2017 14:46
		003.d	
	LCSD 320-175097/3-A	2017.07.23A	07/23/2017 14:53
		004.d	
TP-PFC-019-TPI	320-29732-1	2017.07.23A	07/23/2017 16:16
		016.d	
TP-PFC-019-TPE	320-29732-3	2017.07.23A	07/23/2017 16:30
		018.d	
TP-PFC-019-TPI DL	320-29732-1 DL	2017.07.24A	07/24/2017 20:07
		A 029.d	
TP-PFC-019-MID-CARBON	320-29732-2	2017.07.24A	07/24/2017 20:14
		A_030.d	

Lab Name: TestAmerica Sacramento	Job No.: 320-29732-1
SDG No.:	
Lab File ID: 2017.07.27C_002.d	Lab Sample ID: MB 320-175742/1-A
Matrix: Water	Date Extracted: 07/25/2017 09:12
Instrument ID: A8_N	Date Analyzed: 07/27/2017 20:55
Level:(Low/Med) Low	

		LAB	
CLIENT SAMPLE ID	LAB SAMPLE ID	FILE ID	DATE ANALYZED
	LCS 320-175742/2-A	2017.07.27C	07/27/2017 21:02
		003.d	
	LCSD 320-175742/3-A	2017.07.27C	07/27/2017 21:09
		004.d	
TP-PFC-019-TPE-D RE	320-29732-4 RE	2017.07.27C	07/27/2017 22:18
		_014.d	

FORM I LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-29732-1

SDG No.:

Client Sample ID: TP-PFC-019-TPI Lab Sample ID: 320-29732-1

Matrix: Water Lab File ID: 2017.07.23A_016.d

Analysis Method: 537 (Modified) Date Collected: 07/06/2017 09:11

Extraction Method: 3535 Date Extracted: 07/20/2017 10:13

Sample wt/vol: 256.3(mL) Date Analyzed: 07/23/2017 16:16

Con. Extract Vol.: 0.50(mL) Dilution Factor: 1

Injection Volume: 2(uL) GC Column: GeminiC18 3x100 ID: 3(mm)

% Moisture: GPC Cleanup:(Y/N) N

Analysis Batch No.: 175528 Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
275 00 4		7.7			0.001	0.45
375-22-4	Perfluorobutanoic acid (PFBA)	77	M	2.4	0.98	0.45
2706-90-3	Perfluoropentanoic acid (PFPeA)	180		2.4	2.0	0.96
307-24-4	Perfluorohexanoic acid (PFHxA)	350		2.4	2.0	0.77
375-85-9	Perfluoroheptanoic acid (PFHpA)	66		2.4	2.0	0.78
335-67-1	Perfluorooctanoic acid (PFOA)	1300	M E	2.4	2.0	0.73
375-95-1	Perfluorononanoic acid (PFNA)	2.3	J	2.4	2.0	0.64
335-76-2	Perfluorodecanoic acid (PFDA)	1.1	J	2.4	0.98	0.43
2058-94-8	Perfluoroundecanoic acid (PFUnA)	2.0	U	2.4	2.0	0.73
307-55-1	Perfluorododecanoic acid (PFDoA)	2.0	U	2.4	2.0	0.57
72629-94-8	Perfluorotridecanoic Acid (PFTriA)	2.0	U	2.4	2.0	0.54
375-73-5	Perfluorobutanesulfonic acid (PFBS)	52		2.4	2.0	0.90
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	350		2.4	2.0	0.85
375-92-8	Perfluoroheptanesulfonic Acid (PFHpS)	9.0		2.4	2.0	0.70
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	370	E	3.9	2.9	1.2
335-77-3	Perfluorodecanesulfonic acid (PFDS)	2.9	U	3.9	2.9	1.2
754-91-6	Perfluorooctane Sulfonamide (FOSA)	1.1	J	39	2.0	0.62

FORM I LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-29732-1

SDG No.:

Client Sample ID: TP-PFC-019-TPI Lab Sample ID: 320-29732-1

Matrix: Water Lab File ID: 2017.07.23A_016.d

Analysis Method: 537 (Modified) Date Collected: 07/06/2017 09:11

Extraction Method: 3535 Date Extracted: 07/20/2017 10:13

Sample wt/vol: 256.3(mL) Date Analyzed: 07/23/2017 16:16

Con. Extract Vol.: 0.50(mL) Dilution Factor: 1

Injection Volume: 2(uL) GC Column: GeminiC18 3x100 ID: 3(mm)

% Moisture: GPC Cleanup:(Y/N) N

Analysis Batch No.: 175528 Units: ng/L

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL01056	13C8 FOSA	14	Q	25-150
STL00992	13C4 PFBA	77		25-150
STL00993	13C2 PFHxA	71		25-150
STL00990	13C4 PFOA	67		25-150
STL00995	13C5 PFNA	66		25-150
STL00996	13C2 PFDA	65		25-150
STL00997	13C2 PFUnA	48		25-150
STL00998	13C2 PFDoA	45		25-150
STL00994	1802 PFHxS	87		25-150
STL00991	13C4 PFOS	83		25-150
STL01892	13C4-PFHpA	93		25-150
STL01893	13C5 PFPeA	80		25-150

Report Date: 24-Jul-2017 13:03:26 Chrom Revision: 2.2 26-Jun-2017 08:09:44

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170724-45776.b\2017.07.23A_016.d

Lims ID: 320-29732-C-1-A Client ID: TP-PFC-019-TPI

Sample Type: Client

Inject. Date: 23-Jul-2017 16:16:27 ALS Bottle#: 14 Worklist Smp#: 16

Injection Vol: 2.0 ul Dil. Factor: 1.0000

Sample Info: 320-29732-c-1-a Misc. Info.: Plate: 1 Rack: 4

Operator ID: SACINSTLCMS01 Instrument ID: A8_N

Method: \ChromNa\Sacramento\ChromData\A8_N\20170724-45776.b\A8_N.m

Limit Group: LC PFC_DOD ICAL

Last Update: 24-Jul-2017 13:03:07 Calib Date: 23-Jul-2017 13:58:26

Integrator: Picker

Quant Method: Isotopic Dilution Quant By: Initial Calibration

Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20170723-45765.b\2017.07.23ICAL_010.d

Column 1: Det: EXP1

Process Host: XAWRK004

First Level Reviewer: chandrasenas Date: 24-Jul-2017 13:00:25

First Level Revie	wer: cha	ndraser	ias		Date:	2	24-Jul-2017 13:00:25)		
Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
2 Perfluorobuty 212.90 > 169.00	•	1.556	0.007	1.000	4198764	39.5			514	M M
D 113C4 PFBA 217.00 > 172.00	1.563	1.556	0.007		6028469	38.6		77.3	29917	
4 Perfluoropen 262.90 > 219.00 D 3 13C5-PFPe	1.773	cid 1.775	-0.002	1.000	8353125	91.2			1747	
267.90 > 223.00	1.773	1.775	-0.002		4396468	39.8		79.6	24507	
5 Perfluorobuta 298.90 > 80.00 298.90 > 99.00		nic acid 1.802 1.802	-0.002 -0.002	1.000 1.000	4755935 1849467	26.7	2.57(0.00-0.00)		1281 1132	
6 Perfluorohex 313.00 > 269.00	2.051	2.055	-0.004	1.000	12241152	179.0			5508	
D 7 13C2 PFHx 315.00 > 270.00	2.051	2.055	-0.004		3590817	35.5		71.0	31043	
10 Perfluorohej 363.00 > 319.00	2.394	2.403	-0.009	1.000	2690798	33.7			2060	
D 9 13C4-PFHp 367.00 > 322.00	2.394	2.403	-0.009		3888667	46.4		92.8	28078	
8 Perfluorohex 399.00 > 80.00	2.410		-0.009	1.000	23121934	178.7			7047	
D 11 18O2 PFH; 403.00 > 84.00	2.410	2.419	-0.009		5657487	41.2		87.0	38633	
* 62 13C2-PFOA 415.00 > 370.00	2.764	2.764	0.0		40585	50.0			381	
15 Perfluorooct 413.00 > 369.00 413.00 > 169.00	2.764	cid 2.771 2.771	-0.007 -0.007	1.000 1.000	40456661 31680912	685.3	1.28(0.90-1.10)		6058 8511	EM EM M

Report Date: 24-Jul-2017 13:03:26 Chrom Revision: 2.2 26-Jun-2017 08:09:44 Data File:

Data File:	\\Cnrc	mina\5a	acrament	O/Chrom	Data\A8_N\201	70724-4577	6.D\2U17.U7.23A_U	1 6 .0		
Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 14 13C4 PFO	Δ									
417.00 > 372.00		2.771	-0.007		2766898	33.7		67.4	19996	
16 Perfluorohe										
449.00 > 80.00			-0.007	1.000	466602	4.62			155	
17 Perfluorooct	ane sulf	onic acid	b							E
499.00 > 80.00	3.141	3.151	-0.010	1.000	18035244	189.7			5956	E
499.00 > 99.00	3.141	3.151	-0.010	1.000	3997565		4.51(0.90-1.10)		21922	
20 Perfluoronor										
463.00 > 419.00		3.151	-0.001	1.000	52777	1.20			55.6	
D 18 13C4 PFOS										
503.00 > 80.00		3.151	-0.010		4299837	39.7		83.1	15530	
D 19 13C5 PFN		0.454	0.004		04/7/05	20.0			00/00	
468.00 > 423.00		3.151	-0.001		2167405	33.0		65.9	20680	
D 21 13C8 FOS		2 507	0.000		12/4525	(00		12.0	11050	
506.00 > 78.00			-0.002		1264535	6.92		13.8	11258	
22 Perfluorooct 498.00 > 78.00			e -0.002	1.000	13182	0.5780			111	
496.00 > 76.00 D 23 13C2 PFD/		3.307	-0.002	1.000	13102	0.5760			111	
515.00 > 470.00		3.507	-0.002		1825788	32.7		65.4	12479	
24 Perfluorode			-0.002		1023700	32.7		05.4	124//	
513.00 > 469.00			-0.002	1.000	20512	0.5733			51.6	
31 Perfluoround			0.002		200.2	0.07.00			00	
563.00 > 519.00		3.833	0.003	1.000	3618	0.0737			9.4	
D 30 13C2 PFUr										
565.00 > 520.00		3.833	-0.007		983090	24.1		48.3	6347	
D 36 13C2 PFD	ρΑ									
615.00 > 570.00	4.123	4.123	0.0		1007959	22.6		45.1	3174	
41 Perfluorotrid	lecanoic	acid								
663.00 > 619.00	4.382	4.388	-0.006	1.000	1718	0.1001			1.6	
42 Perfluorotetr	adecan	oic acid								M
712.50 > 668.90		4.630	0.032	1.000	44204	1.14			6.3	M
713.00 > 169.00	4.621	4.630	-0.009	0.991	2394		18.46(0.00-0.00)		65.9	

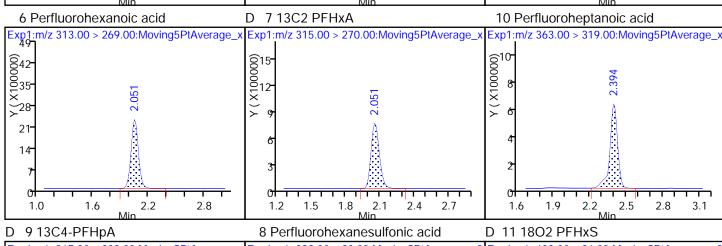
OC Flag Legend Processing Flags

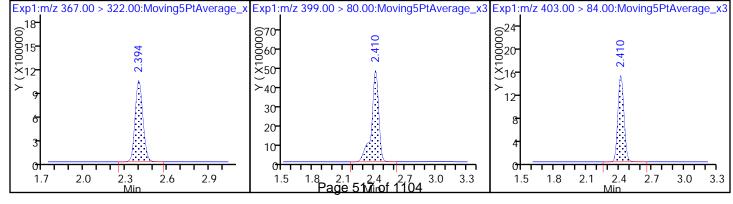
E - Exceeded Maximum Amount

Review Flags

M - Manually Integrated

Report Date: 24-Jul-2017 13:03:26 Chrom Revision: 2.2 26-Jun-2017 08:09:44 TestAmerica Sacramento Data File: \ChromNa\Sacramento\ChromData\A8_N\20170724-45776.b\2017.07.23A_016.d **Injection Date:** 23-Jul-2017 16:16:27 Instrument ID: A8_N Lims ID: 320-29732-C-1-A Lab Sample ID: 320-29732-1 TP-PFC-019-TPI Client ID: Operator ID: SACINSTLCMS01 ALS Bottle#: 14 Worklist Smp#: 16 Dil. Factor: Injection Vol: 2.0 ul 1.0000 LC PFC_DOD ICAL Method: $A8_N$ Limit Group: 2 Perfluorobutyric acid (M) D 113C4 PFBA 4 Perfluoropentanoic acid Exp1:m/z 212.90 > 169.00:Moving5PtAverage_x Exp1:m/z 262.90 > 219.00:Moving5PtAverage_x Exp1:m/z 217.00 > 172.00:Moving5PtAverage_x 35- ©21- <u>630</u> ©35 030 8 25-× ∑₁₅ $\stackrel{\smile}{\times}_{25}$ 15 15 10 10 1.4 1.7 2.0 0.8 1.1 1.4 2.0 1.5 1.8 2.1 5 Perfluorobutanesulfonic acid 5 Perfluorobutanesulfonic acid 3 13C5-PFPeA Exp1:m/z 267.90 > 223.00:Moving5PtAverage_x Exp1:m/z 298.90 > 80.00:Moving5PtAverage_x3 Exp1:m/z 298.90 > 99.00:Moving5PtAverage_x3 6²⁴ (21⁻ 00018 ×15 ×60 36 24 12 1.3 1.9 2.2 2.5 1.9 2.2 2.5 1.5 1.8 1.0 1.6 1.0 1.3 1.6 2.1 2.4 6 Perfluorohexanoic acid D 7 13C2 PFHxA 10 Perfluoroheptanoic acid =_-Exp1:m/z 313.00 > 269.00:Moving5PtAverage_x Exp1:m/z 315.00 > 270.00:Moving5PtAverage_>





Chrom Revision: 2.2 26-Jun-2017 08:09:44

3.4

3.7

4.0

3.1

3.4

3.7

2.7

2.4

3.0

3.3

3.6

3.9

2.8

26-

4.2

4.5

Report Date: 24-Jul-2017 13:03:27 Chrom Revision: 2.2 26-Jun-2017 08:09:44 Manual Integration/User Assign Peak Report

TestAmerica Sacramento

Data File: \ChromNa\Sacramento\ChromData\A8_N\20170724-45776.b\2017.07.23A_016.d

Client ID: TP-PFC-019-TPI

Operator ID: SACINSTLCMS01 ALS Bottle#: 14 Worklist Smp#: 16

Injection Vol: 2.0 ul Dil. Factor: 1.0000

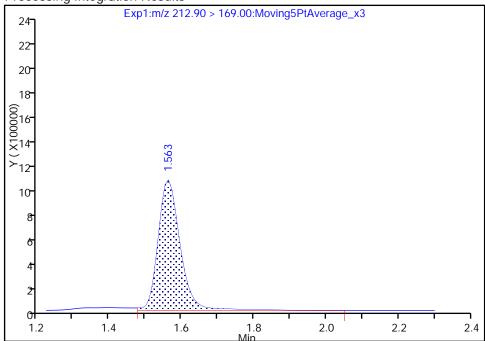
Method: A8_N Limit Group: LC PFC_DOD ICAL

Column: Detector EXP1

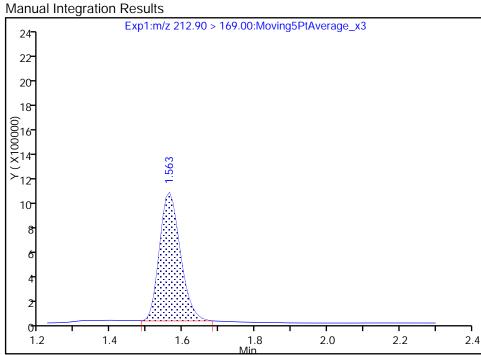
2 Perfluorobutyric acid, CAS: 375-22-4

Signal: 1

RT: 1.56 Area: 4548929 Amount: 42.775257 Amount Units: ng/ml **Processing Integration Results**



RT: 1.56
Area: 4198764
Amount: 39.482526
Amount Units: ng/ml



Reviewer: chandrasenas, 24-Jul-2017 12:59:28

Audit Action: Manually Integrated

Audit Reason: Baseline

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Report Date: 24-Jul-2017 13:03:27 Chrom Revision: 2.2 26-Jun-2017 08:09:44 Manual Integration/User Assign Peak Report

TestAmerica Sacramento

Data File: \ChromNa\Sacramento\ChromData\A8_N\20170724-45776.b\2017.07.23A_016.d

Client ID: TP-PFC-019-TPI

Operator ID: SACINSTLCMS01 ALS Bottle#: 14 Worklist Smp#: 16

Injection Vol: 2.0 ul Dil. Factor: 1.0000

Method: A8_N Limit Group: LC PFC_DOD ICAL

Column: Detector EXP1

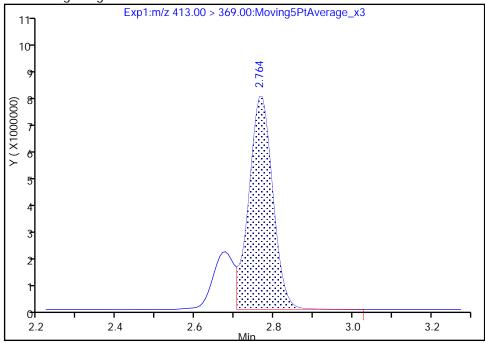
15 Perfluorooctanoic acid, CAS: 335-67-1

Signal: 1

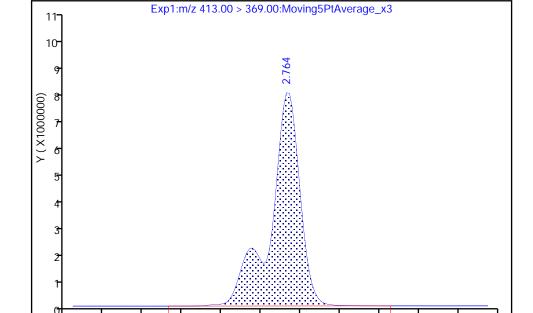
RT: 2.76
Area: 32616078
Amount: 552.5170
Amount Units: ng/ml

Processing Integration Results

Manual Integration Results



RT: 2.76 Area: 40456661 Amount: 685.3366 Amount Units: ng/ml



2.8

3.0

3.2

Reviewer: chandrasenas, 24-Jul-2017 12:59:41

2.2

Audit Action: Manually Integrated

Audit Reason: Isomers

2.6

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Report Date: 24-Jul-2017 13:03:27 Chrom Revision: 2.2 26-Jun-2017 08:09:44 Manual Integration/User Assign Peak Report

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170724-45776.b\2017.07.23A_016.d

Injection Date: 23-Jul-2017 16:16:27 Instrument ID: A8_N

Lims ID: 320-29732-C-1-A Lab Sample ID: 320-29732-1

Client ID: TP-PFC-019-TPI

Operator ID: SACINSTLCMS01 ALS Bottle#: 14 Worklist Smp#: 16

Injection Vol: 2.0 ul Dil. Factor: 1.0000

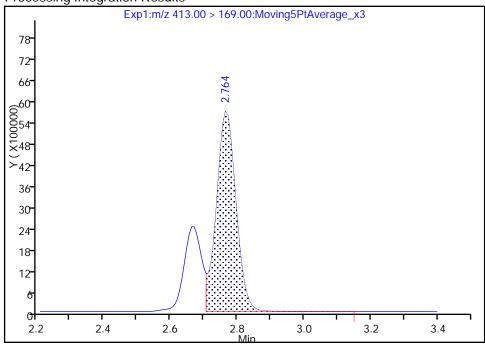
Method: A8_N Limit Group: LC PFC_DOD ICAL

Column: Detector EXP1

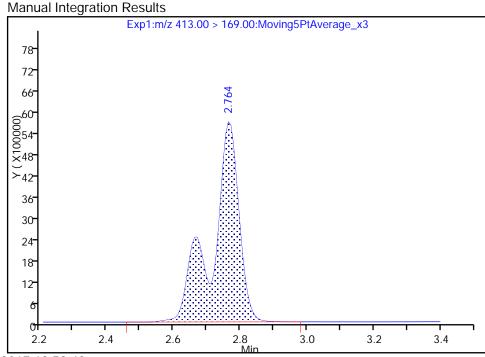
15 Perfluorooctanoic acid, CAS: 335-67-1

Signal: 2

RT: 2.76 Area: 23056054 Amount: 552.5170 Amount Units: ng/ml **Processing Integration Results**



RT: 2.76
Area: 31680912
Amount: 685.3366
Amount Units: ng/ml



Reviewer: chandrasenas, 24-Jul-2017 12:59:43

Audit Action: Manually Integrated

Audit Reason: Isomers

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FORM I LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-29732-1

SDG No.:

Client Sample ID: TP-PFC-019-TPI RE Lab Sample ID: 320-29732-1 RE

Matrix: Water Lab File ID: 2017.07.25B_009.d

Analysis Method: 537 (Modified) Date Collected: 07/06/2017 09:11

Extraction Method: 3535 Date Extracted: 07/20/2017 09:15

Sample wt/vol: 258(mL) Date Analyzed: 07/25/2017 15:05

Con. Extract Vol.: 0.50 (mL) Dilution Factor: 1

Injection Volume: 2(uL) GC Column: GeminiC18 3x100 ID: 3(mm)

% Moisture: GPC Cleanup:(Y/N) N

Analysis Batch No.: 175951 Units: ng/L

С	AS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
376-	-06-7	Perfluorotetradecanoic acid (PFTeA)	1.6	JМQ	2.4	0.97	0.39

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL00998	13C2 PFDoA	67		25-150

Report Date: 26-Jul-2017 11:33:02 Chrom Revision: 2.2 26-Jun-2017 08:09:44

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170726-45877.b\2017.07.25B_009.d

Lims ID: 320-29732-A-1-A Client ID: TP-PFC-019-TPI

Sample Type: Client

Inject. Date: 25-Jul-2017 15:05:59 ALS Bottle#: 8 Worklist Smp#: 9

Injection Vol: 2.0 ul Dil. Factor: 1.0000

 Sample Info:
 320-29732-a-1-a

 Misc. Info.:
 Plate: 1 Rack: 4

Operator ID: SACINSTLCMS01 Instrument ID: A8_N

Method: \ChromNa\Sacramento\ChromData\A8_N\20170726-45877.b\A8_N.m

Limit Group: LC PFC_DOD ICAL

Last Update: 26-Jul-2017 11:32:34 Calib Date: 23-Jul-2017 13:58:26

Integrator: Picker

Quant Method: Isotopic Dilution Quant By: Initial Calibration

Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20170723-45765.b\2017.07.23ICAL_010.d

Column 1: Det: EXP1

Process Host: XAWRK028

First Level Reviewer: chandrasenas Date: 26-Jul-2017 11:28:43

1 1131	Level Kevie	wei. Cha	Hulasei	ias		Date.		20-Jul-2017 11.20.43	<u>, </u>		
	Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 1	13C4 PFBA	\									
	00 > 172.00		1.559	-0.005		5583417	35.8		71.6	19239	
	Perfluorobuty 90 > 169.00	•	1 550	-0.005	1.000	4384421	44.5			684	
	13C5-PFPe		1.557	0.000	1.000	7307721	44.0			004	
	90 > 223.00		1.778	-0.015		4153572	37.6		75.2	19604	
	Perfluoropen			0.015	1 000	0/07024	100.4			1/70	
	90 > 219.00 Perfluorobuta		1.778	-0.015	1.000	8687934	100.4			1670	
	90 > 80.00		1.806	-0.015	1.000	5496715	27.8			1589	
	90 > 99.00		1.806	-0.015	1.000	2158433		2.55(0.00-0.00)		1278	
	13C2 PFHx 00 > 270.00		2.058	-0.018		3951597	39.1		78.1	24528	
	Perfluorohex			-0.010		3731377	37.1		70.1	24320	
	00 > 269.00			-0.018	1.000	13329443	177.1			5839	
	13C4-PFHp		2 202	0.001		2020202	47.0		02.0	22100	
	00 > 322.00 Perfluorohe _l		2.393 acid	-0.021		3929293	46.9		93.8	22199	
	00 > 319.00		2.393	-0.021	1.000	2836560	35.2			1719	
	18O2 PFH										
	00 > 84.00		2.409			6280772	45.7		96.6	25767	
	Perfluorohex 00 > 80.00		onic acid 2.409		1.000	26143625	182.0			7568	
	13C4 PFO										
	00 > 372.00		2.756	-0.022		2709791	33.0		66.0	17268	
	13C2-PFO <i>A</i> 00 > 370.00		2.756	0.020		43315	50.0			349	
413.	00 > 370.00	2.121	2.750	-0.029		43313	50.0			347	

Report Date: 26-Jul-2017 11:33:02 Chrom Revision: 2.2 26-Jun-2017 08:09:44 Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170726-45877.b\2017.07.25B_009.d

Data	File:	\\Chrc	omNa\Sa	acrament	to\Chrom	iData\A8_N\201	70726-4587	7.b\2017.07.25B_00)9.d		
	Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
413.0	Perfluorooct 00 > 369.00 00 > 169.00	2.734	2.756	-0.022 -0.022	1.000 1.000	32891176 21453369	568.9	1.53(0.90-1.10)		325 218	E E
449.0	Perfluorohe 00 > 80.00	2.742	2.763	-0.021	1.000	541951	4.91			158	
499.0 499.0	Perfluorooct 00 > 80.00 00 > 99.00	3.109 3.109	onic acio 3.131 3.131		1.000 1.000	19655204 4391465	188.9	4.48(0.90-1.10)		6549 6575	E E
468.0	13C5 PFN 00 > 423.00	3.109	3.131	-0.022		1901732	28.9		57.9	12968	
503.0	13C4 PFO: 00 > 80.00	3.109	3.131	-0.022		4704278	43.5		91.0	12847	
463.0	Perfluorono 00 > 419.00	3.109		-0.031	1.000	52185	1.35			56.4	
506.0	13C8 FOS	3.466	3.487	-0.021		484386	2.65		5.3	5360	
515.0	13C2 PFD 00 > 470.00	3.466		-0.031		1878910	33.7		67.3	11006	
513.0	Perfluorode 00 > 469.00	3.475	3.497	-0.022	1.000	21788	0.5917			66.9	
563.0	Perfluoroun 00 > 519.00	3.803		-0.019	1.000	4973	0.0662			9.6	
565.0	13C2 PFUi 00 > 520.00	3.793		-0.029		1409672	34.6		69.2	6399	
613.0	Perfluorodo 00 > 569.00	4.099		-0.017	1.000	1772	0.0633			5.0	
615.0	13C2 PFDo 00 > 570.00	4.099		-0.017		1505668	33.7		67.4	4397	
712.5	Perfluorotet 50 > 668.90 00 > 169.00	4.642	4.614	0.028	1.000 0.991	48462 2741	0.8373	17.68(0.00-0.00)		4.9 68.2	M M

QC Flag Legend Processing Flags

E - Exceeded Maximum Amount

Review Flags

M - Manually Integrated

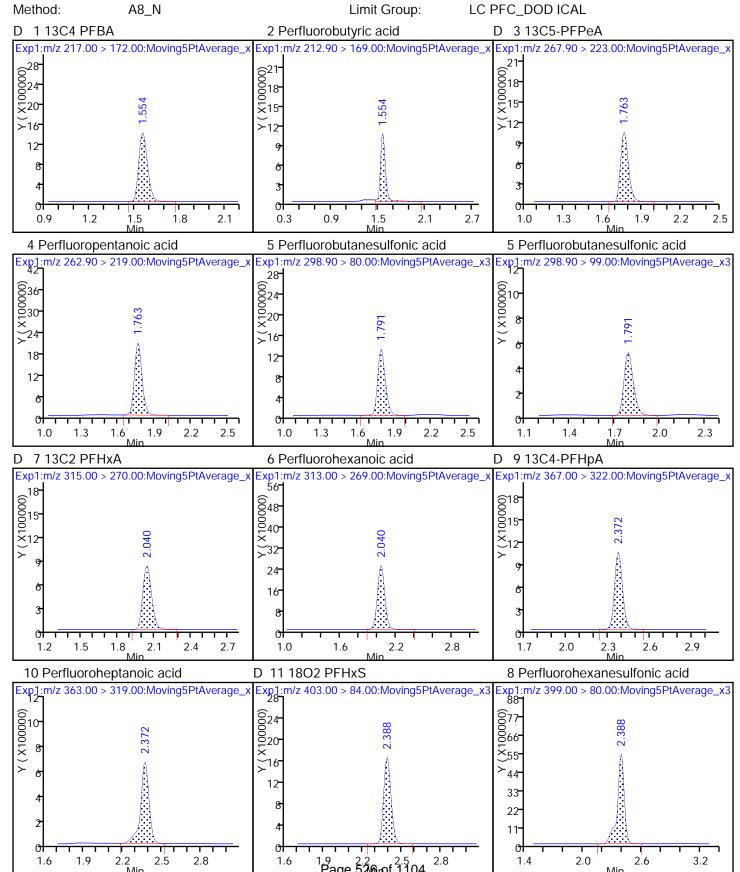
Lims ID: 320-29732-A-1-A

Lab Sample ID: 320-29732-1

Client ID: TP-PFC-019-TPI

Operator ID: SACINSTLCMS01 ALS Bottle#: 8 Worklist Smp#: 9

Injection Vol: 2.0 ul Dil. Factor: 1.0000



0

2.7

3.0

3.3

2.8

3.1

11

2.7

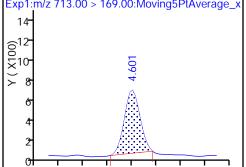
3.0

3.3

3.9

3.6

4.0



4.5

4.8

Report Date: 26-Jul-2017 11:33:02 Chrom Revision: 2.2 26-Jun-2017 08:09:44 Manual Integration/User Assign Peak Report

TestAmerica Sacramento

Data File: \ChromNa\Sacramento\ChromData\A8_N\20170726-45877.b\2017.07.25B_009.d

Injection Date: 25-Jul-2017 15:05:59 Instrument ID: $A8_N$ Lims ID: 320-29732-A-1-A Lab Sample ID: 320-29732-1

Client ID: TP-PFC-019-TPI

SACINSTLCMS01 ALS Bottle#: Operator ID: 8 Worklist Smp#: 9

Injection Vol: 2.0 ul Dil. Factor: 1.0000

LC PFC_DOD ICAL Method: A8_N Limit Group:

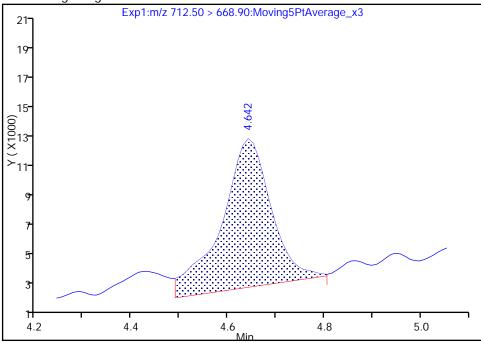
Column: Detector EXP1

42 Perfluorotetradecanoic acid, CAS: 376-06-7

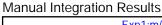
Signal: 1

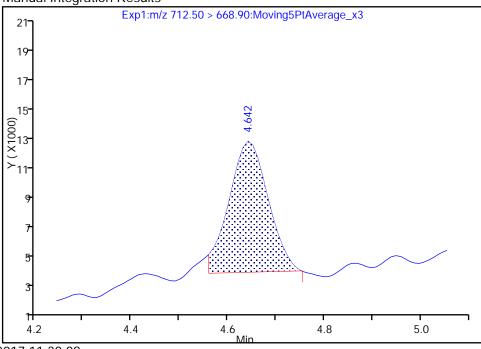
RT: 4.64 Area: 70397 Amount: 1.216276 Amount Units: ng/ml

Processing Integration Results



RT: 4.64 Area: 48462 Amount: 0.837297 Amount Units: ng/ml





Reviewer: chandrasenas, 26-Jul-2017 11:30:08

Audit Action: Manually Integrated

Audit Reason: Baseline

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FORM I LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-29732-1

SDG No.:

Client Sample ID: TP-PFC-019-TPI DL Lab Sample ID: 320-29732-1 DL

Matrix: Water Lab File ID: 2017.07.24AA_029.d

Analysis Method: 537 (Modified) Date Collected: 07/06/2017 09:11

Extraction Method: 3535 Date Extracted: 07/20/2017 10:13

Sample wt/vol: 256.3(mL) Date Analyzed: 07/24/2017 20:07

Con. Extract Vol.: 0.50(mL) Dilution Factor: 10

Injection Volume: 2(uL) GC Column: GeminiC18 3x100 ID: 3(mm)

% Moisture: GPC Cleanup:(Y/N) N

Analysis Batch No.: 175757 Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
375-22-4	Perfluorobutanoic acid (PFBA)	80	D	24	9.8	4.5
2706-90-3	Perfluoropentanoic acid (PFPeA)	190	D	24	20	9.6
307-24-4	Perfluorohexanoic acid (PFHxA)	350	D	24	20	7.7
375-85-9	Perfluoroheptanoic acid (PFHpA)	70	D	24	20	7.8
335-67-1	Perfluorooctanoic acid (PFOA)	1500	D M	24	20	7.3
375-95-1	Perfluorononanoic acid (PFNA)	20	U	24	20	6.4
335-76-2	Perfluorodecanoic acid (PFDA)	4.8	JD	24	9.8	4.3
2058-94-8	Perfluoroundecanoic acid (PFUnA)	20	U	24	20	7.3
307-55-1	Perfluorododecanoic acid (PFDoA)	20	U	24	20	5.7
72629-94-8	Perfluorotridecanoic Acid (PFTriA)	5.6	JD	24	20	5.4
375-73-5	Perfluorobutanesulfonic acid (PFBS)	55	D	24	20	9.0
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	360	D	24	20	8.5
375-92-8	Perfluoroheptanesulfonic Acid (PFHpS)	12	JD	24	20	7.0
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	360	D	39	29	12
335-77-3	Perfluorodecanesulfonic acid (PFDS)	29	U	39	29	12
754-91-6	Perfluorooctane Sulfonamide (FOSA)	18	JD	390	20	6.2

FORM I LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-29732-1

SDG No.:

Client Sample ID: TP-PFC-019-TPI DL Lab Sample ID: 320-29732-1 DL

Matrix: Water Lab File ID: 2017.07.24AA_029.d

Analysis Method: 537 (Modified) Date Collected: 07/06/2017 09:11

Extraction Method: 3535 Date Extracted: 07/20/2017 10:13

Sample wt/vol: 256.3(mL) Date Analyzed: 07/24/2017 20:07

Con. Extract Vol.: 0.50(mL) Dilution Factor: 10

Injection Volume: 2(uL) GC Column: GeminiC18 3x100 ID: 3(mm)

% Moisture: GPC Cleanup:(Y/N) N

Analysis Batch No.: 175757 Units: ng/L

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL01056	13C8 FOSA	15	Q	25-150
STL00992	13C4 PFBA	98		25-150
STL00993	13C2 PFHxA	94		25-150
STL00990	13C4 PFOA	88		25-150
STL00995	13C5 PFNA	77		25-150
STL00996	13C2 PFDA	62		25-150
STL00997	13C2 PFUnA	54		25-150
STL00998	13C2 PFDoA	47		25-150
STL00994	1802 PFHxS	96		25-150
STL00991	13C4 PFOS	82		25-150
STL01892	13C4-PFHpA	105		25-150
STL01893	13C5 PFPeA	95		25-150

Report Date: 25-Jul-2017 11:29:49 Chrom Revision: 2.2 26-Jun-2017 08:09:44

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170725-45831.b\2017.07.24AA_029.d

Lims ID: 320-29732-C-1-A Client ID: TP-PFC-019-TPI

Sample Type: Client

Inject. Date: 24-Jul-2017 20:07:48 ALS Bottle#: 21 Worklist Smp#: 2

Injection Vol: 2.0 ul Dil. Factor: 10.0000

Sample Info: 320-29732-c-1-a 10X Misc. Info.: Plate: 1 Rack: 5

Operator ID: SACINSTLCMS01 Instrument ID: A8_N

Method: \ChromNa\Sacramento\ChromData\A8_N\20170725-45831.b\A8_N.m

Limit Group: LC PFC_DOD ICAL

Last Update: 25-Jul-2017 11:29:47 Calib Date: 23-Jul-2017 13:58:26

Integrator: Picker

Quant Method: Isotopic Dilution Quant By: Initial Calibration

Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20170723-45765.b\2017.07.23ICAL_010.d

Column 1: Det: EXP1

Process Host: XAWRK029

First Level Reviewer: chandrasenas Date: 25-Jul-2017 11:27:51

First Level Revieu	wer: cha	ndrasen	as		Date:	2	25-Jul-2017 11:27:51			
Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
2 Perfluorobuty	ric acid									
212.90 > 169.00		1.547	0.009	1.000	547520	4.08			226	
D 113C4 PFBA										
217.00 > 172.00	1.556	1.547	0.009		760862	4.88		9.8	7568	
4 Perfluoropen	tanoic a	cid								
262.90 > 219.00	1.766	1.756	0.010	1.000	1086642	9.91			574	
D 3 13C5-PFPe	A									
267.90 > 223.00	1.766	1.756	0.010		525883	4.76		9.5	10402	
5 Perfluorobuta	anesulfo	nic acid								
298.90 > 80.00		1.784	0.009	1.000	554719	2.82			346	
298.90 > 99.00		1.784	0.0	0.995	222940		2.49(0.00-0.00)		318	
6 Perfluorohex										
313.00 > 269.00		2.032	0.0	1.000	1614537	17.8			2779	
D 7 13C2 PFHx										
315.00 > 270.00		2.032	0.0		477398	4.72		9.4	11834	
10 Perfluoroher				1 000	004404	0.53			700	
363.00 > 319.00		2.366	0.009	1.000	324104	3.57			708	
D 9 13C4-PFHp		0011				5 o 7		10.5	1050/	
367.00 > 322.00		2.366	0.009		441714	5.27		10.5	12586	
8 Perfluorohex				4 000	0/40/50	40.5			0010	
399.00 > 80.00		2.382	0.009	1.000	2643650	18.5			2210	
D 11 18O2 PFHx		0.000	0.001		(04754	4.55		0.7	1/007	
403.00 > 84.00		2.382	0.001		624754	4.55		9.6	16027	
* 62 13C2-PFOA		2.725	0.010		10/05	F0.0			254	
415.00 > 370.00		2.725	0.010		12685	50.0			354	
15 Perfluorooct			0.000	1 000	5004554	77.0			1000	M
413.00 > 369.00 413.00 > 169.00		2.7332.733	0.002 0.002	1.000 1.000	5991551 3754663	77.9	1.60(0.90-1.10)		1993 12098	M M
413.00 > 109.00	2.733	2.733	0.002	1.000	3/34003		1.00(0.70-1.10)		12098	IVI
					D EOO - (4	404				

Report Date: 25-Jul-2017 11:29:49
Data File: \ChromNa\Sac Chrom Revision: 2.2 26-Jun-2017 08:09:44 \\ChromNa\Sacramento\ChromData\A8 N\20170725-45831 b\2017 07 24AA 029 d

Data File:	\\Chrc	omNa\Sa	acrament	:o\Chrom	Data\A8_N\201	70725-4583	1.b\2017.07.24AA_()29.d		
Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 14 13C4 PFO	Δ									
417.00 > 372.00		2.733	0.002		360631	4.39		8.8	9723	
16 Perfluorohe	ptanesul	fonic Aci	id							
449.00 > 80.00	2.742	2.740	0.002	1.000	60564	0.6049			195	
17 Perfluorooct	ane sulf	onic acid	ł							
499.00 > 80.00		3.108	0.007	1.000	1727470	18.3			6890	
499.00 > 99.00		3.108	0.007	1.000	380229		4.54(0.90-1.10)		2262	
20 Perfluoronoi			0.007	1 000	1/045	0.0454			25.5	
463.00 > 419.00		3.108	0.007	1.000	16315	0.3151			35.5	
D 19 13C5 PFN/		2 100	0.007		25 4200	2.07		77	E040	
468.00 > 423.00		3.108	0.007		254288	3.87		7.7	5060	
D 18 13C4 PFOS 503.00 > 80.00		3.108	0.007		426674	3.94		8.2	8521	
22 Perfluorooct					420074	3.74		0.2	0321	
498.00 > 78.00		3.457	0.016	1.000	22254	0.9087			238	
D 21 13C8 FOSA		3.437	0.010	1.000	22254	0.7007			230	
506.00 > 78.00		3 457	0.016		135773	0.7427		1.5	1415	
24 Perfluorode			0.0.0		.007.70	J., 12,				
513.00 > 469.00		3.467	0.015	1.000	8273	0.2447			43.9	
D 23 13C2 PFD/	Д									
515.00 > 470.00		3.467	0.015		172546	3.09		6.2	2087	
29 Perfluorodeo	cane Sul	lfonic aci	id							
599.00 > 80.00	3.795	3.778	0.017	1.000	9113	0.1640			306	
31 Perfluoround	decanoio	c acid								
563.00 > 519.00	3.812	3.797	0.015	1.000	5697	0.1464			9.0	
D 30 13C2 PFUr	nΑ									
565.00 > 520.00	3.812	3.797	0.015		110145	2.70		5.4	1266	
37 Perfluorodo		c acid								
613.00 > 569.00	4.108	4.095	0.013	1.000	4865	0.2515			16.3	
D 36 13C2 PFD										
615.00 > 570.00	4.108	4.095	0.013		104109	2.33		4.7	330	
41 Perfluorotrid										
663.00 > 619.00	4.376	4.358	0.018	1.000	5052	0.2850			12.3	
42 Perfluorotetr										M
712.50 > 668.90		4.596	0.037	1.000	27339	0.6831	12 5 / (0.00.0.00)		7.1	M
713.00 > 169.00	4.612	4.596	0.016	0.996	2016		13.56(0.00-0.00)		92.0	

OC Flag Legend Review Flags

M - Manually Integrated

Chrom Revision: 2.2 26-Jun-2017 08:09:44 Report Date: 25-Jul-2017 11:29:49 TestAmerica Sacramento \ChromNa\Sacramento\ChromData\A8_N\20170725-45831.b\2017.07.24AA_029.d Data File: **Injection Date:** 24-Jul-2017 20:07:48 Instrument ID: A8_N Lims ID: 320-29732-C-1-A Lab Sample ID: 320-29732-1 TP-PFC-019-TPI Client ID: Operator ID: SACINSTLCMS01 ALS Bottle#: 21 Worklist Smp#: 2 Injection Vol: Dil. Factor: 10.0000 2.0 ul Method: LC PFC_DOD ICAL $A8_N$ Limit Group: 2 Perfluorobutyric acid D 113C4 PFBA 4 Perfluoropentanoic acid Exp1:m/z 212.90 > 169.00:Moving5PtAverage_x Exp1:m/z 217.00 > 172.00:Moving5PtAverage_x Exp1:m/z 262.90 > 219.00:Moving5PtAverage_x 42 (0042 ×35 0024 000 20 X <u>8</u>36-×30-≻28 12 18 21 12 14 1.7 1.2 1.5 1.8 1.4 2.0 2.3 1.8 2.1 1.5 2.1 5 Perfluorobutanesulfonic acid 5 Perfluorobutanesulfonic acid D 3 13C5-PFPeA Exp1:m/z 298.90 > 99.00:Moving5PtAverage_x3 Exp1:m/z 267.90 > 223.00:Moving5PtAverage_x Exp1:m/z 298.90 > 80.00:Moving5PtAverage_x3 28 0024 0001 20 Y (X10000) ∑20 12 2.3 2.5 1.2 1.4 2.0 1.9 2.2 1.5 1.8 2.1 1.0 1.3 1.6 2.4 6 Perfluorohexanoic acid 7 13C2 PFHxA 10 Perfluoroheptanoic acid Exp1:m/z 363.00 > 319.00:Moving5PtAverage_x Exp1:m/z 313.00 > 269.00:Moving5PtAverage_> Exp1:m/z 315.00 > 270.00:Moving5PtAverage_ 21 63 00054 ×45 0018-15-12-27 18 01 1.8 2.1 1.9 2.8 1.7 2.0 2.3 2.9 1.5 2.4 2.7 1.3 1.6 2.2 2.5 2.6 9 13C4-PFHpA 8 Perfluorohexanesulfonic acid D 11 1802 PFHxS Exp1:m/z 367.00 > 322.00:Moving5PtAverage_x Exp1:m/z 399.00 > 80.00:Moving5PtAverage_x3 Exp1:m/z 403.00 > 84.00:Moving5PtAverage_x3 28 (X100000) 0024 0020 ×20 ∑16⁻ 12 0 0

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3.2

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01 - 4.3

4.6 Mir

Report Date: 25-Jul-2017 11:29:49 Chrom Revision: 2.2 26-Jun-2017 08:09:44 Manual Integration/User Assign Peak Report

TestAmerica Sacramento

Data File: \ChromNa\Sacramento\ChromData\A8_N\20170725-45831.b\2017.07.24AA_029.d

Injection Date: 24-Jul-2017 20:07:48 Instrument ID: A8_N

Lims ID: 320-29732-C-1-A Lab Sample ID: 320-29732-1

Client ID: TP-PFC-019-TPI

Operator ID: SACINSTLCMS01 ALS Bottle#: 21 Worklist Smp#: 2

Injection Vol: 2.0 ul Dil. Factor: 10.0000

Method: A8_N Limit Group: LC PFC_DOD ICAL

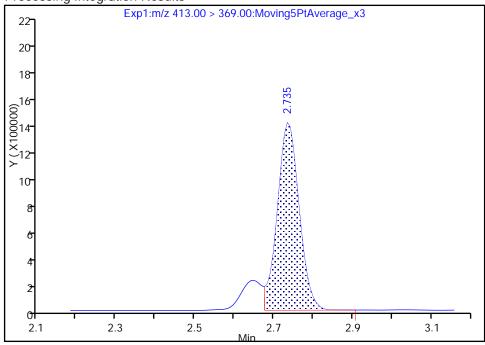
Column: Detector EXP1

15 Perfluorooctanoic acid, CAS: 335-67-1

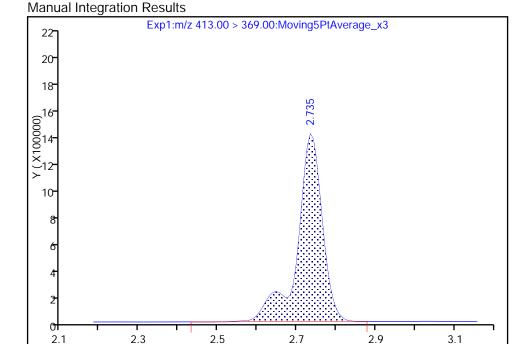
Signal: 1

RT: 2.73
Area: 5191957
Amount: 67.480003
Amount Units: ng/ml

Processing Integration Results



RT: 2.73
Area: 5991551
Amount: 77.872348
Amount Units: ng/ml



Reviewer: chandrasenas, 25-Jul-2017 11:27:29

Audit Action: Manually Integrated

Audit Reason: Isomers

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Report Date: 25-Jul-2017 11:29:49 Chrom Revision: 2.2 26-Jun-2017 08:09:44 Manual Integration/User Assign Peak Report

TestAmerica Sacramento

Data File: \ChromNa\Sacramento\ChromData\A8_N\20170725-45831.b\2017.07.24AA_029.d

Injection Date: 24-Jul-2017 20:07:48 Instrument ID: A8_N

Lims ID: 320-29732-C-1-A Lab Sample ID: 320-29732-1

Client ID: TP-PFC-019-TPI

Operator ID: SACINSTLCMS01 ALS Bottle#: 21 Worklist Smp#: 2

Injection Vol: 2.0 ul Dil. Factor: 10.0000

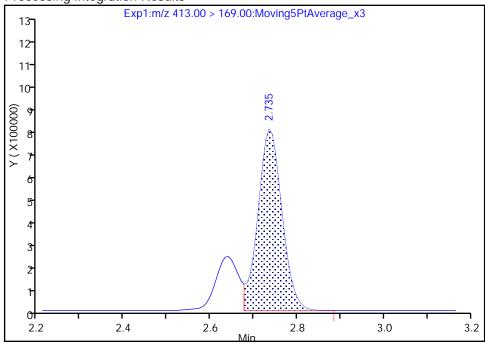
Method: A8_N Limit Group: LC PFC_DOD ICAL

Column: Detector EXP1

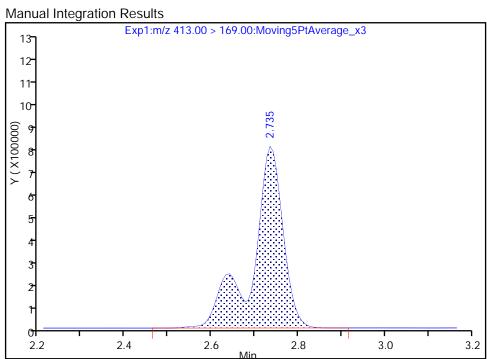
15 Perfluorooctanoic acid, CAS: 335-67-1

Signal: 2

RT: 2.73 Area: 2916719 Amount: 67.480003 Amount Units: ng/ml **Processing Integration Results**



RT: 2.73
Area: 3754663
Amount: 77.872348
Amount Units: ng/ml



Reviewer: chandrasenas, 25-Jul-2017 11:27:32

Audit Action: Manually Integrated

Audit Reason: Isomers

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FORM I LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-29732-1

SDG No.:

Client Sample ID: TP-PFC-019-MID-CARBON Lab Sample ID: 320-29732-2

Matrix: Water Lab File ID: 2017.07.24AA_030.d

Analysis Method: 537 (Modified) Date Collected: 07/06/2017 09:16

Extraction Method: 3535 Date Extracted: 07/20/2017 10:13

Sample wt/vol: 250.8(mL) Date Analyzed: 07/24/2017 20:14

Con. Extract Vol.: 0.50 (mL) Dilution Factor: 1

Injection Volume: 2(uL) GC Column: GeminiC18 3x100 ID: 3(mm)

% Moisture: GPC Cleanup:(Y/N) N

Analysis Batch No.: 175757 Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
375-22-4	Perfluorobutanoic acid (PFBA)	100		2.5	1.0	0.46
2706-90-3	Perfluoropentanoic acid (PFPeA)	16		2.5	2.0	0.99
307-24-4	Perfluorohexanoic acid (PFHxA)	1.2	J	2.5	2.0	0.78
375-85-9	Perfluoroheptanoic acid (PFHpA)	2.0	U M	2.5	2.0	0.80
335-67-1	Perfluorooctanoic acid (PFOA)	2.0	U M	2.5	2.0	0.75
375-95-1	Perfluorononanoic acid (PFNA)	2.0	U	2.5	2.0	0.65
335-76-2	Perfluorodecanoic acid (PFDA)	1.0	U	2.5	1.0	0.44
2058-94-8	Perfluoroundecanoic acid (PFUnA)	2.0	U	2.5	2.0	0.75
307-55-1	Perfluorododecanoic acid (PFDoA)	2.0	U	2.5	2.0	0.58
72629-94-8	Perfluorotridecanoic Acid (PFTriA)	2.0	U	2.5	2.0	0.55
375-73-5	Perfluorobutanesulfonic acid (PFBS)	2.0	U	2.5	2.0	0.92
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	2.0	U	2.5	2.0	0.87
375-92-8	Perfluoroheptanesulfonic Acid (PFHpS)	2.0	U	2.5	2.0	0.71
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	3.0	U	4.0	3.0	1.3
335-77-3	Perfluorodecanesulfonic acid (PFDS)	3.0	U	4.0	3.0	1.2
754-91-6	Perfluorooctane Sulfonamide (FOSA)	2.5	J	40	2.0	0.64

FORM I LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-29732-1

SDG No.:

Client Sample ID: TP-PFC-019-MID-CARBON Lab Sample ID: 320-29732-2

Matrix: Water Lab File ID: 2017.07.24AA_030.d

Analysis Method: 537 (Modified) Date Collected: 07/06/2017 09:16

Extraction Method: 3535 Date Extracted: 07/20/2017 10:13

Sample wt/vol: 250.8(mL) Date Analyzed: 07/24/2017 20:14

Con. Extract Vol.: 0.50 (mL) Dilution Factor: 1

Injection Volume: 2(uL) GC Column: GeminiC18 3x100 ID: 3(mm)

% Moisture: GPC Cleanup:(Y/N) N

Analysis Batch No.: 175757 Units: ng/L

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL01056	13C8 FOSA	6	Q	25-150
STL00992	13C4 PFBA	101		25-150
STL00993	13C2 PFHxA	100		25-150
STL00990	13C4 PFOA	102		25-150
STL00995	13C5 PFNA	81		25-150
STL00996	13C2 PFDA	72		25-150
STL00997	13C2 PFUnA	63		25-150
STL00998	13C2 PFDoA	58		25-150
STL00994	1802 PFHxS	102		25-150
STL00991	13C4 PFOS	99		25-150
STL01892	13C4-PFHpA	116		25-150
STL01893	13C5 PFPeA	102		25-150

Report Date: 25-Jul-2017 11:29:50 Chrom Revision: 2.2 26-Jun-2017 08:09:44

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170725-45831.b\2017.07.24AA_030.d

Lims ID: 320-29732-C-2-A

Client ID: TP-PFC-019-MID-CARBON

Sample Type: Client

Inject. Date: 24-Jul-2017 20:14:42 ALS Bottle#: 22 Worklist Smp#: 3

Injection Vol: 2.0 ul Dil. Factor: 1.0000

Sample Info: 320-29732-c-2-a Misc. Info.: Plate: 1 Rack: 5

Operator ID: SACINSTLCMS01 Instrument ID: A8_N

Method: \ChromNa\Sacramento\ChromData\A8_N\20170725-45831.b\A8_N.m

Limit Group: LC PFC_DOD ICAL

Last Update: 25-Jul-2017 11:29:47 Calib Date: 23-Jul-2017 13:58:26

Integrator: Picker

Quant Method: Isotopic Dilution Quant By: Initial Calibration

Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20170723-45765.b\2017.07.23ICAL_010.d

Column 1: Det: EXP1

Process Host: XAWRK029

First Level Reviewer: chandrasenas Date: 25-Jul-2017 11:29:26

First Level Reviewer: chandrasenas					Date: 25-Jul-2017 11:29:26					
Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
2 Perfluorobuty	yric acid									
212.90 > 169.00		1.547	0.0	1.000	7256667	52.2			2184	
D 1 13C4 PFBA 217.00 > 172.00		1.547	0.0		7882017	50.5		101	39506	
4 Perfluoropen			0.0		7002017	30.3		101	37300	
262.90 > 219.00			-0.018	1.000	964124	8.17			516	
D 3 13C5-PFPe										
267.90 > 223.00		1.756	0.009		5659223	51.2		102	58267	
5 Perfluorobuta 298.90 > 80.00		nic acid 1.784	0.0	1.000	7708	0.0368			5.9	
	1.784	1.784	0.0	1.000	6100	0.0000	1.26(0.00-0.00)		5.7	
6 Perfluorohex										
313.00 > 269.00		2.032	-0.023	1.000	59936	0.6222			115	
D 7 13C2 PFHx. 315.00 > 270.00		2.032	0.0		5059206	50.0		100	38357	
10 Perfluoroher			0.0		3037200	30.0		100	30337	M
363.00 > 319.00		2.366	0.006	1.000	8480	0.0848			19.7	M
D 913C4-PFHp										
367.00 > 322.00		2.366	0.006		4873962	58.1		116	32912	
8 Perfluorohex 399.00 > 80.00		onic acid 2.382	I 0.006	1.000	27225	0.1787			48.3	
D 11 18O2 PFH		2.002	0.000	1.000	27220	0.1707			10.0	
403.00 > 84.00		2.382	0.006		6659563	48.5		102	29502	
* 62 13C2-PFOA										
415.00 > 370.00		2.725	0.012		4774	50.0			263	
15 Perfluorooct 413.00 > 369.00		2.733	0.011	1.000	18315	0.2044			6.4	M
413.00 > 169.00		2.733	0.004	0.997	15180	0.2014	1.21(0.90-1.10)		137	М

Report Date: 25-Jul-2017 11:29:50
Data File: \ChromNa\Sac Chrom Revision: 2.2 26-Jun-2017 08:09:44 \\ChromNa\Sacramento\ChromData\A8 N\20170725-45831 b\2017 07 24AA 030 d

Data File:	\\Chr	omNa\Sa	acrament	to\Chrom	Data\A8_N\201	70725-4583	1.b\2017.07.24AA_(030.d		
Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 14 13C4 PFO	Δ									
417.00 > 372.00		2.733	0.004		4200129	51.1		102	30295	
16 Perfluorohe	ptanesul	fonic Ac	id							
449.00 > 80.00	2.744	2.740	0.004	1.000	2788	0.0233			66.6	
20 Perfluorono	nanoic a	cid								
463.00 > 419.00	3.114	3.108	0.006	1.000	2464	0.0454			5.2	
D 19 13C5 PFN										
468.00 > 423.00		3.108	0.006		2664242	40.5		81.1	16429	
D 18 13C4 PFO										
503.00 > 80.00		3.108	0.006		5100042	47.1		98.6	19289	
22 Perfluorooct				1 000	1070/	4.04			007	
498.00 > 78.00		3.457	0.012	1.000	12706	1.24			207	
D 21 13C8 FOS		2 457	0.010		F/7207	2.10			(275	
506.00 > 78.00		3.457	0.012		567387	3.10		6.2	6275	
24 Perfluorode 513.00 > 469.00		cid 3.467	0.020	1.000	3382	0.0861			19.8	
D 23 13C2 PFD		3.407	0.020	1.000	3302	0.0001			17.0	
515.00 > 470.00		3.467	0.020		2003960	35.9		71.8	14098	
29 Perfluorode					2003700	33.7		71.0	14070	
599.00 > 80.00		3.778	0.017	1.000	2083	0.0314			52.1	
31 Perfluoroun			0.0			0.00.			02	
563.00 > 519.00		3.797	0.015	1.000	6240	0.1309			14.4	
D 30 13C2 PFUi										
565.00 > 520.00		3.797	0.015		1285527	31.6		63.1	6783	
D 36 13C2 PFD	ρA									
615.00 > 570.00		4.095	0.011		1305899	29.2		58.5	3465	
41 Perfluorotrio	lecanoic	acid								
663.00 > 619.00	4.374	4.358	0.016	1.000	3298	0.1483			3.0	
42 Perfluoroteti	radecan	oic acid								
712.50 > 668.90	4.652	4.596	0.056	1.000	43158	0.8597			8.4	
713.00 > 169.00	4.611	4.596	0.015	0.991	3164		13.64(0.00-0.00)		115	

QC Flag Legend Review Flags

M - Manually Integrated

Report Date: 25-Jul-2017 11:29:50 Chrom Revision: 2.2 26-Jun-2017 08:09:44 TestAmerica Sacramento Data File: \\ChromNa\\Sacramento\\ChromData\\A8_\N\20170725-45831.b\\2017.07.24AA_030.d **Injection Date:** 24-Jul-2017 20:14:42 Instrument ID: A8_N Lims ID: 320-29732-C-2-A Lab Sample ID: 320-29732-2 Client ID: TP-PFC-019-MID-CARBON Operator ID: SACINSTLCMS01 ALS Bottle#: 22 Worklist Smp#: 3 Dil. Factor: Injection Vol: 2.0 ul 1.0000 LC PFC_DOD ICAL Method: $A8_N$ Limit Group: 2 Perfluorobutyric acid D 113C4 PFBA 4 Perfluoropentanoic acid Exp1:m/z 217.00 > 172.00:Moving5PtAverage_x Exp1:m/z 212.90 > 169.00:Moving5PtAverage_x Exp1:m/z 262.90 > 219.00:Moving5PtAverage_x 00001 0036 (30 00 25 X 15 18 15 12 10 10 1.2 1.5 1.1 1.4 1.7 2.0 0.9 1.8 2.1 1.4 2.0 2.3 3 13C5-PFPeA 5 Perfluorobutanesulfonic acid 5 Perfluorobutanesulfonic acid Exp1:m/z 298.90 > 80.00:Moving5PtAverage_x3 Exp1:m/z 298.90 > 99.00:Moving5PtAverage_x3 Exp1:m/z 267.90 > 223.00:Moving5PtAverage_x 00024 00024 ×20 (18-(00015-X) 12-<u>@</u>36 ×30 18 12 1.9 2.2 1.5 1.8 2.4 1.7 2.0 1.2 2.1 1.3 1.6 7 13C2 PFHxA 6 Perfluorohexanoic acid 10 Perfluoroheptanoic acid (M) D Exp1:m/z 313.00 > 269.00:Moving5PtAverage_> Exp1:m/z 363.00 > 319.00:Moving5PtAverage_x Exp1:m/z 315.00 > 270.00:Moving5PtAverage_x 21 44 (000001X) X 12 612 612 S³⁸ <u>×</u>10 C ≻26 20 14 1.6 1.9 2.5 1.7 2.0 2.6 2.3 2.2 1.4 2.3 2.0 1.3 2.6 1.1 9 13C4-PFHpA 8 Perfluorohexanesulfonic acid D 11 1802 PFHxS Exp1:m/z 367.00 > 322.00:Moving5PtAverage_x Exp1:m/z 399.00 > 80.00:Moving5PtAverage_x3 Exp1:m/z 403.00 > 84.00:Moving5PtAverage_x3 630 00 025 (000018⁻ (12⁻ (00010⁻ X) 8 ∑₁₅ 15 10

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Chrom Revision: 2.2 26-Jun-2017 08:09:44

Report Date: 25-Jul-2017 11:29:50

Chrom Revision: 2.2 26-Jun-2017 08:09:44

Report Date: 25-Jul-2017 11:29:50

Report Date: 25-Jul-2017 11:29:50 Chrom Revision: 2.2 26-Jun-2017 08:09:44 Manual Integration/User Assign Peak Report

TestAmerica Sacramento

Data File: \ChromNa\Sacramento\ChromData\A8_N\20170725-45831.b\2017.07.24AA_030.d

Injection Date: 24-Jul-2017 20:14:42 Instrument ID: A8_N

Lims ID: 320-29732-C-2-A Lab Sample ID: 320-29732-2

Client ID: TP-PFC-019-MID-CARBON

Operator ID: SACINSTLCMS01 ALS Bottle#: 22 Worklist Smp#: 3

Injection Vol: 2.0 ul Dil. Factor: 1.0000

Method: A8_N Limit Group: LC PFC_DOD ICAL

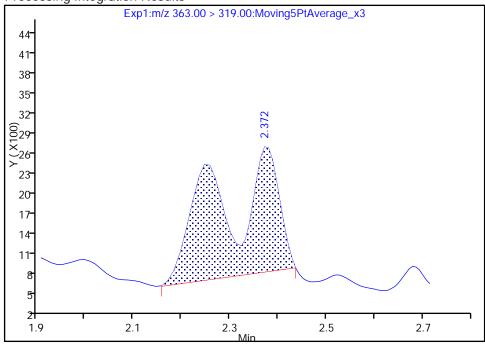
Column: Detector EXP1

10 Perfluoroheptanoic acid, CAS: 375-85-9

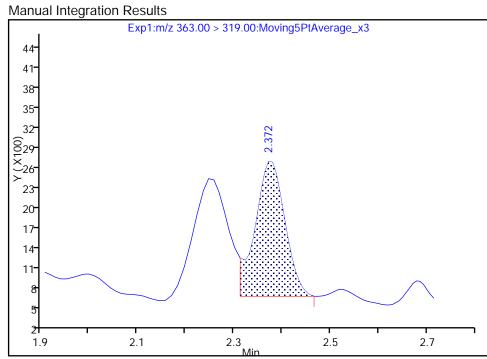
Signal: 1

RT: 2.37
Area: 15680
Amount: 0.156720
Amount Units: ng/ml

Processing Integration Results



RT: 2.37
Area: 8480
Amount: 0.084757
Amount Units: ng/ml



Reviewer: chandrasenas, 25-Jul-2017 11:29:07

Audit Action: Manually Integrated

Audit Reason: Baseline

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Report Date: 25-Jul-2017 11:29:50 Chrom Revision: 2.2 26-Jun-2017 08:09:44 Manual Integration/User Assign Peak Report

TestAmerica Sacramento

Data File: \ChromNa\Sacramento\ChromData\A8_N\20170725-45831.b\2017.07.24AA_030.d

Injection Date: 24-Jul-2017 20:14:42 Instrument ID: $A8_N$

Lims ID: Lab Sample ID: 320-29732-C-2-A 320-29732-2

Client ID: TP-PFC-019-MID-CARBON

ALS Bottle#: Operator ID: SACINSTLCMS01 22 Worklist Smp#: 3

Injection Vol: 2.0 ul Dil. Factor: 1.0000

Method: A8_N Limit Group: LC PFC_DOD ICAL

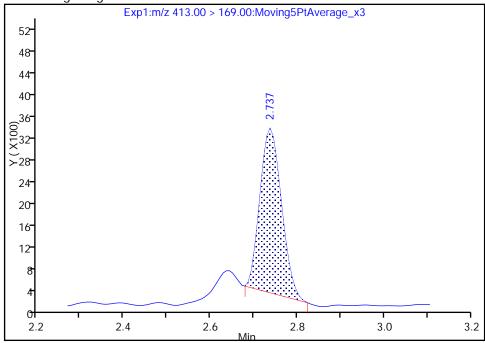
Column: Detector EXP1

15 Perfluorooctanoic acid, CAS: 335-67-1

Signal: 2

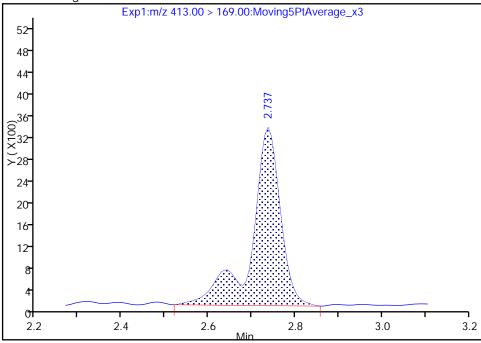
RT: 2.74 Area: 10457 Amount: 0.204386 Amount Units: ng/ml

Processing Integration Results



RT: 2.74 Area: 15180 Amount: 0.204386 Amount Units: ng/ml





Reviewer: chandrasenas, 25-Jul-2017 11:28:45

Audit Action: Manually Integrated

Audit Reason: Isomers

FORM I LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-29732-1

SDG No.:

Client Sample ID: TP-PFC-019-MID-CARBON RE Lab Sample ID: 320-29732-2 RE

Matrix: Water Lab File ID: 2017.07.25B_010.d

Analysis Method: 537 (Modified) Date Collected: 07/06/2017 09:16

Extraction Method: 3535 Date Extracted: 07/20/2017 09:15

Sample wt/vol: 252(mL) Date Analyzed: 07/25/2017 15:12

Con. Extract Vol.: 0.50 (mL) Dilution Factor: 1

Injection Volume: 2(uL) GC Column: GeminiC18 3x100 ID: 3(mm)

% Moisture: GPC Cleanup:(Y/N) N

Analysis Batch No.: $\underline{175951}$ Units: $\underline{ng/L}$

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
376-06-7	Perfluorotetradecanoic acid (PFTeA)	1.4	JMQ	2.5	0.99	0.40

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL00998	13C2 PFDoA	92		25-150

Report Date: 26-Jul-2017 11:33:04 Chrom Revision: 2.2 26-Jun-2017 08:09:44

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170726-45877.b\2017.07.25B_010.d

Lims ID: 320-29732-A-2-A

Client ID: TP-PFC-019-MID-CARBON

Sample Type: Client

Inject. Date: 25-Jul-2017 15:12:53 ALS Bottle#: 9 Worklist Smp#: 10

Injection Vol: 2.0 ul Dil. Factor: 1.0000

Sample Info: 320-29732-a-2-a Misc. Info.: Plate: 1 Rack: 4

Operator ID: SACINSTLCMS01 Instrument ID: A8_N

Method: \ChromNa\Sacramento\ChromData\A8_N\20170726-45877.b\A8_N.m

Limit Group: LC PFC_DOD ICAL

Last Update: 26-Jul-2017 11:32:34 Calib Date: 23-Jul-2017 13:58:26

Integrator: Picker

Quant Method: Isotopic Dilution Quant By: Initial Calibration

Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20170723-45765.b\2017.07.23ICAL_010.d

Column 1: Det: EXP1

Process Host: XAWRK028

First Level Reviewer: chandrasenas Date: 26-Jul-2017 11:29:21

T II St Level Ttevie	wci. ciia	marascri	us		Date.		.0 301 2017 11.27.21			
Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 113C4 PFBA 217.00 > 172.00		1.559	-0.003		6920652	44.4		88.7	22571	
2 Perfluorobuty 212.90 > 169.00	1.556	1.559	-0.003	1.000	6245005	51.2			2077	
D 3 13C5-PFPe 267.90 > 223.00	1.765	1.778	-0.013		5103593	46.2		92.4	32176	
4 Perfluoropen 262.90 > 219.00 5 Perfluorobuta	1.738	1.778	-0.040	1.000	796679	7.49			636	
298.90 > 80.00 298.90 > 99.00	1.784	1.806	-0.022 -0.022	1.000 1.000	19171 8799	0.0883	2.18(0.00-0.00)		13.0 11.2	
D 7 13C2 PFHx 315.00 > 270.00	2.043	2.058	-0.015		4904639	48.5		97.0	24391	
6 Perfluorohex 313.00 > 269.00	2.032	2.058	-0.026	1.000	72423	0.7755			137	
D 9 13C4-PFHp 367.00 > 322.00	2.373	2.393	-0.020		4795857	57.2		114	26709	
10 Perfluorohe 363.00 > 319.00 D 11 1802 PFH	2.373	2.393	-0.020	1.000	10169	0.1033			24.6	
403.00 > 84.00 8 Perfluorohex	2.389	2.409			6894738	50.2		106	25745	
399.00 > 80.00 D 14 13C4 PFO	2.389			1.000	91234	0.5785			121	
417.00 > 372.00 * 62 13C2-PFOA	2.731	2.756	-0.025		4261854	51.9		104	25703	
415.00 > 370.00		2.756	-0.025		3429	50.0			137	

Report Date: 26-Jul-2017 11:33:04 Chrom Revision: 2.2 26-Jun-2017 08:09:44 Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170726-45877.b\2017.07.25B_010.d

Data File:	\\Chrc	mNa\Sa	acrament	:o\Chrom	Data\A8_N\201	/0/26-458/	7.b\2017.07.25B_01	0.d		
Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
15 Perfluorooct	anoic ac	hi.								
413.00 > 369.00		2.756	-0.018	1.000	137651	1.51			42.2	
413.00 > 169.00			-0.025	0.997	83181		1.65(0.90-1.10)		208	
16 Perfluorohe							,			
449.00 > 80.00			-0.025	1.000	1958	0.0160			59.9	
17 Perfluorooct										
499.00 > 80.00	3.106	3.131	-0.025	1.000	63301	0.5498			352	
499.00 > 99.00	3.106	3.131	-0.025	1.000	13264		4.77(0.90-1.10)		89.1	
D 19 13C5 PFNA	4									
468.00 > 423.00	3.106	3.131	-0.025		3050827	46.4		92.8	14271	
D 18 13C4 PFOS	S									
503.00 > 80.00	3.106	3.131	-0.025		5205981	48.1		101	16643	
D 21 13C8 FOSA	Д									
506.00 > 78.00		3.487	-0.023		503727	2.76		5.5	6977	
D 23 13C2 PFD/	4									
515.00 > 470.00		3.497	-0.024		3012088	53.9		108	9511	
24 Perfluorodeo	canoic a	cid								
513.00 > 469.00		3.497	-0.033	1.000	1902	0.0322			13.3	
29 Perfluorodeo	cane Sul	lfonic ac	id							
599.00 > 80.00			-0.024	1.000	2769	0.0408			129	
31 Perfluoround	decanoio	acid								
563.00 > 519.00	3.798	3.822	-0.024	1.000	6469	0.0462			15.8	
D 30 13C2 PFUr	nΑ									
565.00 > 520.00	3.798	3.822	-0.024		2075628	51.0		102	7894	
37 Perfluorodoo	decanoio	acid								
613.00 > 569.00		4.116	-0.020	1.000	3350	0.0880			8.8	
D 36 13C2 PFD	ρA									
615.00 > 570.00	4.096	4.116	-0.020		2048447	45.9		91.7	4807	
41 Perfluorotrid	lecanoic	acid								
663.00 > 619.00	4.364	4.380	-0.016	1.000	4977	0.1427			2.1	
42 Perfluorotetr	adecan	oic acid								М
712.50 > 668.90		4.614	0.016	1.000	56320	0.7152			4.3	М
713.00 > 169.00	4.599	4.614	-0.015	0.993	4362		12.91(0.00-0.00)		94.7	

QC Flag Legend Review Flags

M - Manually Integrated

Report Date: 26-Jul-2017 11:33:05 Chrom Revision: 2.2 26-Jun-2017 08:09:44 TestAmerica Sacramento Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170726-45877.b\2017.07.25B_010.d **Injection Date:** 25-Jul-2017 15:12:53 Instrument ID: A8_N Lims ID: 320-29732-A-2-A Lab Sample ID: 320-29732-2 TP-PFC-019-MID-CARBON Client ID: Operator ID: SACINSTLCMS01 ALS Bottle#: 9 Worklist Smp#: 10 Dil. Factor: 1.0000 Injection Vol: 2.0 ul LC PFC_DOD ICAL Method: $A8_N$ Limit Group: 2 Perfluorobutyric acid D 113C4 PFBA D 313C5-PFPeA Exp1:m/z 212.90 > 169.00:Moving5PtAverage_x Exp1:m/z 267.90 > 223.00:Moving5PtAverage_x Exp1:m/z 217.00 > 172.00:Moving5PtAverage_x (00030-25-X) ©24 ©20 ∑₂₀-15 15 10 10 1.2 1.1 1.4 1.7 2.0 0.9 1.8 2.1 1.4 2.0 2.3 5 Perfluorobutanesulfonic acid 4 Perfluoropentanoic acid 5 Perfluorobutanesulfonic acid Exp1:m/z 298.90 > 80.00:Moving5PtAverage_x3 Exp1:m/z 298.90 > 99.00:Moving5PtAverage_x3 Exp1:m/z 262.90 > 219.00:Moving5PtAverage_x 77 30 00 00 25 (18-(00015-X) 12-X 15 33 10 22 11 2.5 1.7 2.3 1.3 1.9 2.2 1.7 2.0 1.4 2.0 1.0 1.1 1.6 7 13C2 PFHxA 6 Perfluorohexanoic acid 9 13C4-PFHpA Exp1:m/z 315.00 > 270.00:Moving5PtAverage_x Exp1:m/z 313.00 > 269.00:Moving5PtAverage_ Exp1:m/z 367.00 > 322.00:Moving5PtAverage_x 21 21 (00018 (000015 (000015 (000018 (000018 (00018) (00018 (00018) (00018 (00018) (000 ©21- 0018-X15-<u>×</u>15 01 1.9 2.2 2.8 1.9 2.5 2.0 2.3 2.9 1.6 2.5 1.3 1.6 2.2 1.7 2.6 10 Perfluoroheptanoic acid D 11 1802 PFHxS 8 Perfluorohexanesulfonic acid Exp1:m/z 363.00 > 319.00:Moving5PtAverage_x Exp1:m/z 403.00 > 84.00:Moving5PtAverage_x3 Exp1:m/z 399.00 > 80.00:Moving5PtAverage_x3 35 830 <u>8</u>45 ×38-×25 **≻**31· ≻20 15 24 15 10 17 10 10 3 0|

2.9

2.0

1.7

2.3

2.6

2.9

2.3

2.0

2.6

1.7

3.7

4.0

2.8

3.1

3.7

4.0

01 - 2.1

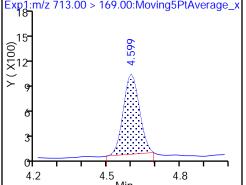
2.7

3.3

3.9

2.8

3.1



Report Date: 26-Jul-2017 11:33:05 Chrom Revision: 2.2 26-Jun-2017 08:09:44 Manual Integration/User Assign Peak Report

TestAmerica Sacramento

Data File: \ChromNa\Sacramento\ChromData\A8_N\20170726-45877.b\2017.07.25B_010.d

Injection Date: 25-Jul-2017 15:12:53 Instrument ID: A8_N

Lims ID: 320-29732-A-2-A Lab Sample ID: 320-29732-2

Client ID: TP-PFC-019-MID-CARBON

Operator ID: SACINSTLCMS01 ALS Bottle#: 9 Worklist Smp#: 10

Injection Vol: 2.0 ul Dil. Factor: 1.0000

Method: A8_N Limit Group: LC PFC_DOD ICAL

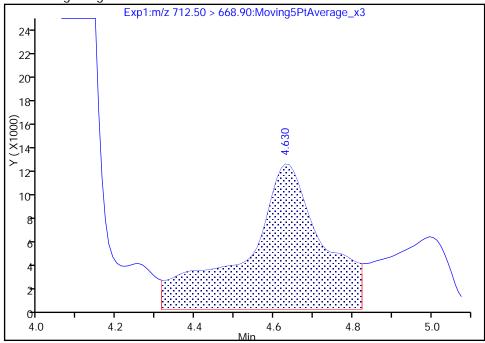
Column: Detector EXP1

42 Perfluorotetradecanoic acid, CAS: 376-06-7

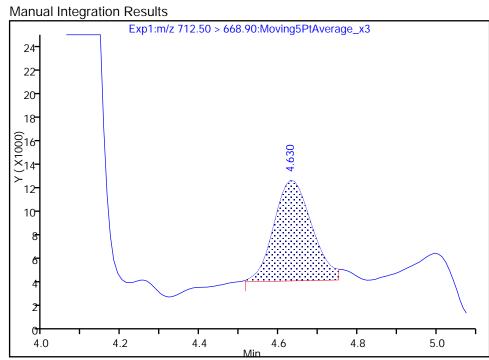
Signal: 1

RT: 4.63
Area: 167703
Amount: 2.129725
Amount Units: ng/ml

Processing Integration Results



RT: 4.63
Area: 56320
Amount: 0.715229
Amount Units: ng/ml



Reviewer: chandrasenas, 26-Jul-2017 11:28:59

Audit Action: Manually Integrated

Audit Reason: Baseline

Page 554 of 1104

FORM I LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-29732-1

SDG No.:

Client Sample ID: TP-PFC-019-TPE Lab Sample ID: 320-29732-3

Matrix: Water Lab File ID: 2017.07.23A_018.d

Analysis Method: 537 (Modified) Date Collected: 07/06/2017 09:21

Extraction Method: 3535 Date Extracted: 07/20/2017 10:13

Sample wt/vol: 259.5(mL) Date Analyzed: 07/23/2017 16:30

Con. Extract Vol.: 0.50 (mL) Dilution Factor: 1

Injection Volume: 2(uL) GC Column: GeminiC18 3x100 ID: 3(mm)

% Moisture: GPC Cleanup:(Y/N) N

Analysis Batch No.: 175528 Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
375-22-4	Perfluorobutanoic acid (PFBA)	85		2.4	0.96	0.44
2706-90-3	Perfluoropentanoic acid (PFPeA)	24		2.4	1.9	0.95
307-24-4	Perfluorohexanoic acid (PFHxA)	6.1		2.4	1.9	0.76
375-85-9	Perfluoroheptanoic acid (PFHpA)	1.9	Ū	2.4	1.9	0.77
335-67-1	Perfluorooctanoic acid (PFOA)	0.76	JМ	2.4	1.9	0.72
375-95-1	Perfluorononanoic acid (PFNA)	1.9	U	2.4	1.9	0.63
335-76-2	Perfluorodecanoic acid (PFDA)	0.96	U	2.4	0.96	0.42
2058-94-8	Perfluoroundecanoic acid (PFUnA)	1.9	U	2.4	1.9	0.72
307-55-1	Perfluorododecanoic acid (PFDoA)	1.9	U	2.4	1.9	0.56
72629-94-8	Perfluorotridecanoic Acid (PFTriA)	1.9	Ū	2.4	1.9	0.53
375-73-5	Perfluorobutanesulfonic acid (PFBS)	1.9	Ū	2.4	1.9	0.88
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	1.9	Ū	2.4	1.9	0.84
375-92-8	Perfluoroheptanesulfonic Acid (PFHpS)	1.9	Ū	2.4	1.9	0.69
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	2.9	Ū	3.9	2.9	1.2
335-77-3	Perfluorodecanesulfonic acid (PFDS)	2.9	Ū	3.9	2.9	1.2
754-91-6	Perfluorooctane Sulfonamide (FOSA)	2.1	J	39	1.9	0.61

FORM I LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-29732-1

SDG No.:

Client Sample ID: TP-PFC-019-TPE Lab Sample ID: 320-29732-3

Matrix: Water Lab File ID: 2017.07.23A_018.d

Analysis Method: 537 (Modified) Date Collected: 07/06/2017 09:21

Extraction Method: 3535 Date Extracted: 07/20/2017 10:13

Sample wt/vol: 259.5(mL) Date Analyzed: 07/23/2017 16:30

Con. Extract Vol.: 0.50 (mL) Dilution Factor: 1

Injection Volume: 2(uL) GC Column: GeminiC18 3x100 ID: 3(mm)

% Moisture: GPC Cleanup:(Y/N) N

Analysis Batch No.: 175528 Units: ng/L

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL01056	13C8 FOSA	2	Q	25-150
STL00992	13C4 PFBA	102		25-150
STL00993	13C2 PFHxA	101		25-150
STL00990	13C4 PFOA	102		25-150
STL00995	13C5 PFNA	85		25-150
STL00996	13C2 PFDA	93		25-150
STL00997	13C2 PFUnA	78		25-150
STL00998	13C2 PFDoA	69		25-150
STL00994	1802 PFHxS	105		25-150
STL00991	13C4 PFOS	102		25-150
STL01892	13C4-PFHpA	118		25-150
STL01893	13C5 PFPeA	98		25-150

Report Date: 24-Jul-2017 13:03:36 Chrom Revision: 2.2 26-Jun-2017 08:09:44

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170724-45776.b\2017.07.23A_018.d

Lims ID: 320-29732-C-3-A Client ID: TP-PFC-019-TPE

Sample Type: Client

Inject. Date: 23-Jul-2017 16:30:15 ALS Bottle#: 16 Worklist Smp#: 18

Injection Vol: 2.0 ul Dil. Factor: 1.0000

Sample Info: 320-29732-c-3-a Misc. Info.: Plate: 1 Rack: 4

Operator ID: SACINSTLCMS01 Instrument ID: A8_N

Method: \ChromNa\Sacramento\ChromData\A8_N\20170724-45776.b\A8_N.m

Limit Group: LC PFC_DOD ICAL

Last Update: 24-Jul-2017 13:03:07 Calib Date: 23-Jul-2017 13:58:26

Integrator: Picker

Quant Method: Isotopic Dilution Quant By: Initial Calibration

Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20170723-45765.b\2017.07.23ICAL_010.d

Column 1: Det: EXP1

Process Host: XAWRK004

First Level Reviewer: chandrasenas Date: 24-Jul-2017 13:02:01

First Level Revie	wer: cha	ındraser	nas		Date:	2	24-Jul-2017 13:02:01			
Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
2 Perfluorobut 212.90 > 169.00	,	1 556	-0.002	1.000	6196607	44.2			1751	
D 113C4 PFBA		1.000	0.002	1.000	0170007	11.2			1701	
217.00 > 172.00	1.554	1.556	-0.002		7953296	51.0		102	32941	
4 Perfluoroper 262.90 > 219.00		cid 1.775	0.011	1.000	1389105	12.2			1444	
D 3 13C5-PFPe		1.773	-0.011	1.000	1309103	12.2			1444	
267.90 > 223.00		1.775	-0.011		5441843	49.2		98.5	59285	
5 Perfluorobut			0.011	1 000	00.400	0.4040			47.4	
298.90 > 80.00 298.90 > 99.00			-0.011 -0.011	1.000 1.000	22423 15185	0.1042	1.48(0.00-0.00)		17.1 16.7	
6 Perfluorohex							,			
313.00 > 269.00		2.055	-0.015	1.000	310521	3.19			669	
D 7 13C2 PFHx 315.00 > 270.00		2.055	-0.003		5111820	50.5		101	42650	
10 Perfluorohe			-0.003		3111020	30.3		101	42030	
363.00 > 319.00	•		-0.013	1.000	6286	0.0620			17.9	
D 9 13C4-PFHp		0.400	0.040		4000500	50.0		440	20001	
367.00 > 322.00 8 Perfluorohex		2.403			4939500	58.9		118	32086	
399.00 > 80.00			-0.013	1.000	31729	0.2030			44.6	
D 11 1802 PFH:										
403.00 > 84.00		2.419	-0.013		6832727	49.7		105	37820	
* 62 13C2-PFOA 415.00 > 370.00		2.764	-0.003		3256	50.0			157	
15 Perfluorooct			0.000		0200	00.0				M
413.00 > 369.00		2.771	-0.010	1.000	35522	0.3965			9.0	M
413.00 > 169.00	2.761	2.771	-0.010	1.000	23454		1.51(0.90-1.10)		127	M

Report Date: 24-Jul-2017 13:03:36 Chrom Revision: 2.2 26-Jun-2017 08:09:44 \\ChromNa\Sacramento\ChromData\A8_N\\20170724-45776_b\\2017_07_23A_018_d

Data File:	\\Chr	omNa\Sa	acrament	to\Chrom	Data\A8_N\201	70724-4577 <i>6</i>	5.b\2017.07.23A_01	8.d		
Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 14 13C4 PFO	А									
417.00 > 372.00		2.771	-0.010		4199369	51.1		102	34702	
16 Perfluorohe	ptanesul	fonic Ac	id							
449.00 > 80.00	2.775	2.778	-0.003	1.000	1664	0.0134			62.5	
20 Perfluorono	nanoic a	cid								
463.00 > 419.00	3.143	3.151	-0.008	1.000	524	0.009160			1.9	
D 18 13C4 PFO										
503.00 > 80.00		3.151	-0.016		5295253	48.9		102	16937	
D 19 13C5 PFN/										
468.00 > 423.00		3.151	-0.008		2809355	42.7		85.5	14073	
D 21 13C8 FOS		0.507	0.045		105000	4.00		0.0	10.10	
506.00 > 78.00		3.507			185829	1.02		2.0	4243	
22 Perfluorooct				1 000	27.42	1.00			77 /	
498.00 > 78.00		3.507	-0.006	1.000	3642	1.09			77.6	
D 23 13C2 PFD/ 515.00 > 470.00		3 507	-0.006		2593789	46.5		92.9	7500	
29 Perfluorode					2373707	40.5		72.7	7300	
599.00 > 80.00			-0.005	1.000	1637	0.0237			72.0	
31 Perfluoroun			-0.003	1.000	1037	0.0237			72.0	
563.00 > 519.00			-0.014	1.000	5197	0.0537			16.1	
D 30 13C2 PFUi										
565.00 > 520.00		3.833	-0.014		1589253	39.0		78.0	6834	
37 Perfluorodo	decanoio	c acid								
613.00 > 569.00		4.123	-0.001	1.000	2543	0.0884			6.1	
D 36 13C2 PFD	οA									
615.00 > 570.00	4.113	4.123	-0.010		1547449	34.7		69.3	5639	
41 Perfluorotrio	lecanoic	acid								
663.00 > 619.00	4.381	4.388	-0.007	1.000	6439	0.2444			3.5	
42 Perfluoroteti	radecan	oic acid								
712.50 > 668.90		4.630	0.020	1.000	64409	1.08			5.5	
713.00 > 169.00	4.609	4.630	-0.021	0.991	4473		14.40(0.00-0.00)		98.7	

QC Flag Legend Review Flags

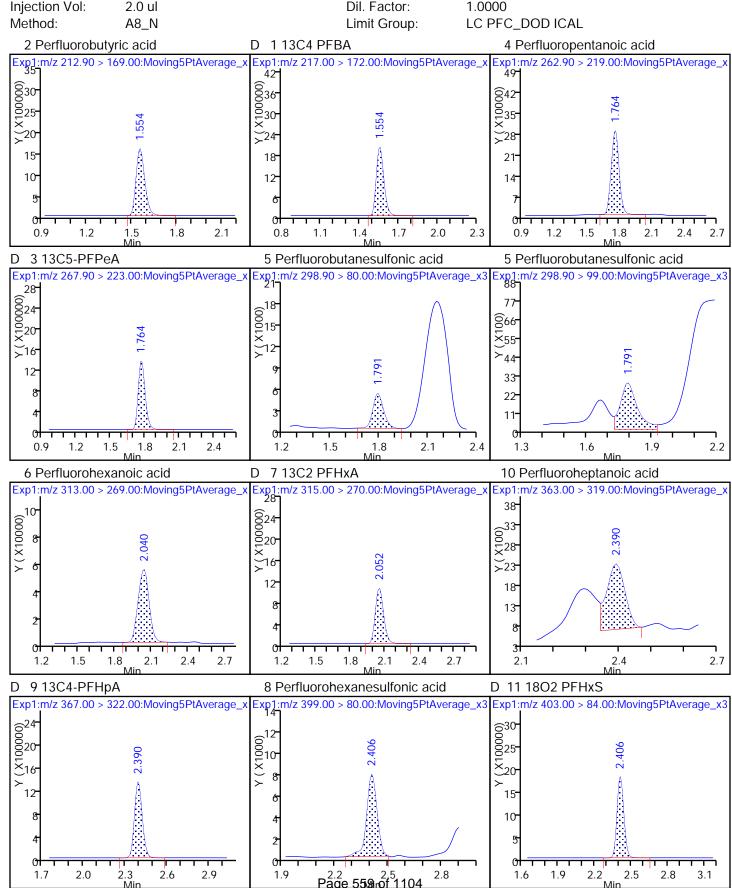
M - Manually Integrated

Report Date: 24-Jul-2017 13:03:36 Chrom Revision: 2.2 26-Jun-2017 08:09:44 TestAmerica Sacramento Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170724-45776.b\\2017.07.23A_018.d **Injection Date:** 23-Jul-2017 16:30:15 Instrument ID: A8_N Lims ID: 320-29732-C-3-A Lab Sample ID: 320-29732-3

TP-PFC-019-TPE Client ID:

Operator ID: SACINSTLCMS01 ALS Bottle#: 16 Worklist Smp#: 18

Dil. Factor: Injection Vol: 2.0 ul 1.0000



Chrom Revision: 2.2 26-Jun-2017 08:09:44

3.5

3.8

4.1

3.1

3.4

3.7

0 2.4

2.7

3.0

3.3

3.6

3.9

2.9

3.2

Report Date: 24-Jul-2017 13:03:36 Chrom Revision: 2.2 26-Jun-2017 08:09:44 Data File: \ChromNa\Sacramento\ChromData\A8_N\20170724-45776.b\2017.07.23A_018.d D 23 13C2 PFDA 24 Perfluorodecanoic acid (ND) 29 Perfluorodecane Sulfonic acid Exp1:m/z 599.00 > 80.00:Moving5PtAverage_x3 Exp1:m/z 515.00 > 470.00:Moving5PtAverage_x Exp1:m/z 513.00 > 469.00:Moving5PtAverage_x X (X100000) 84 (0012 X) X) 8 <u>_</u>72 ×60 ≻₄₈-36**-**24 12 0 4.3 2.8 3.1 3.4 3.7 4.0 2.5 3.1 3.7 3.5 3.8 4.1 31 Perfluoroundecanoic acid D 30 13C2 PFUnA 37 Perfluorododecanoic acid Exp1:m/z 613.00 > 569.00:Moving5PtAverage_x Exp1:m/z 563.00 > 519.00:Moving5PtAverage_x Exp1:m/z 565.00 > 520.00:Moving5PtAverage_x 35 63 0054 ×45 19 630 ×25 0016-× × 13-3.819 ∑20 ∑36- 10 15- 27 18 10 3.7 3.4 4.0 3.7 4.0 4.3 4.3 3.8 4.1 4.4 D 36 13C2 PFDoA 41 Perfluorotridecanoic acid 42 Perfluorotetradecanoic acid Exp1:m/z 615.00 > 570.00:Moving5PtAverage_x Exp1:m/z 663.00 > 619.00:Moving5PtAverage_> Exp1:m/z 712.50 > 668.90:Moving5PtAverage_x 36 56 63 (00054-1×45-31- 0 26-648 0048 ×40 _32 >36 16- 24 27 11 18 16- 0 0 3.9 4.8 4.0 4.3 4.4 5.0 3.3 3.6 4.2 4.5 4.6 4.1 4.7 42 Perfluorotetradecanoic acid Exp1:m/z 713.00 > 169.00:Moving5PtAverage_x 21 618 ×15

01 4.2

4.5

4.8

Report Date: 24-Jul-2017 13:03:37 Chrom Revision: 2.2 26-Jun-2017 08:09:44 Manual Integration/User Assign Peak Report

TestAmerica Sacramento

Data File: \ChromNa\Sacramento\ChromData\A8_N\20170724-45776.b\2017.07.23A_018.d

Injection Date: 23-Jul-2017 16:30:15 Instrument ID: $A8_N$

Lims ID: 320-29732-C-3-A Lab Sample ID: 320-29732-3

Client ID: TP-PFC-019-TPE

SACINSTLCMS01 ALS Bottle#: Operator ID: 16 Worklist Smp#: 18

Injection Vol: 2.0 ul Dil. Factor: 1.0000

Method: A8_N Limit Group: LC PFC_DOD ICAL

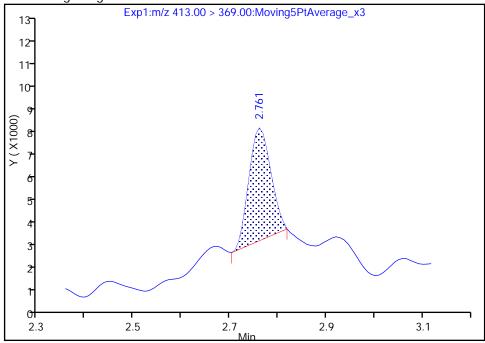
Column: Detector EXP1

15 Perfluorooctanoic acid, CAS: 335-67-1

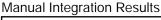
Signal: 1

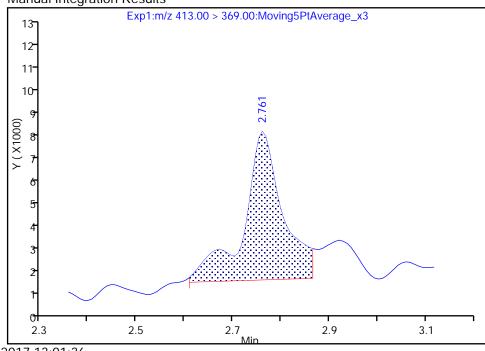
RT: 2.76 Area: 15097 Amount: 0.168505 Amount Units: ng/ml

Processing Integration Results



RT: 2.76 Area: 35522 Amount: 0.396479 Amount Units: ng/ml





Reviewer: chandrasenas, 24-Jul-2017 13:01:36

Audit Action: Manually Integrated

Audit Reason: Isomers

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Report Date: 24-Jul-2017 13:03:37 Chrom Revision: 2.2 26-Jun-2017 08:09:44 Manual Integration/User Assign Peak Report

TestAmerica Sacramento

Data File: \ChromNa\Sacramento\ChromData\A8_N\20170724-45776.b\2017.07.23A_018.d

Injection Date: 23-Jul-2017 16:30:15 Instrument ID: A8_N

Lims ID: 320-29732-C-3-A Lab Sample ID: 320-29732-3

Client ID: TP-PFC-019-TPE

Operator ID: SACINSTLCMS01 ALS Bottle#: 16 Worklist Smp#: 18

Injection Vol: 2.0 ul Dil. Factor: 1.0000

Method: A8_N Limit Group: LC PFC_DOD ICAL

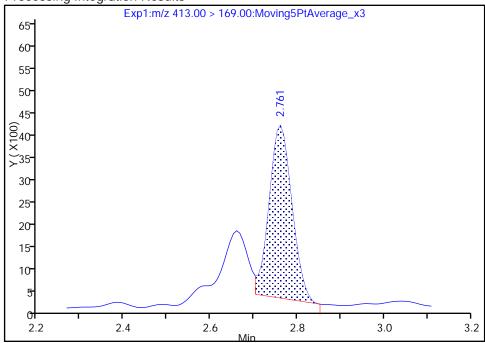
Column: Detector EXP1

15 Perfluorooctanoic acid, CAS: 335-67-1

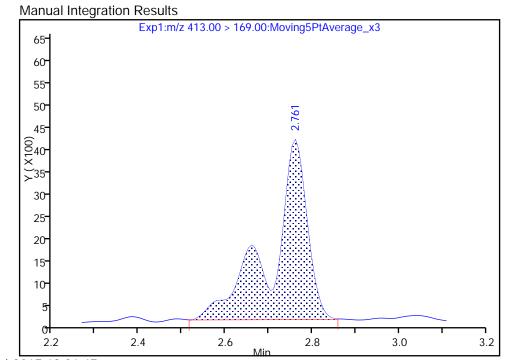
Signal: 2

RT: 2.76
Area: 14202
Amount: 0.168505
Amount Units: ng/ml

Processing Integration Results



RT: 2.76 Area: 23454 Amount: 0.396479 Amount Units: ng/ml



Reviewer: chandrasenas, 24-Jul-2017 13:01:47

Audit Action: Manually Integrated

Audit Reason: Isomers

Page 563 of 1104

FORM I LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-29732-1

SDG No.:

Client Sample ID: TP-PFC-019-TPE RE Lab Sample ID: 320-29732-3 RE

Matrix: Water Lab File ID: 2017.07.25B_011.d

Analysis Method: 537 (Modified) Date Collected: 07/06/2017 09:21

Extraction Method: 3535 Date Extracted: 07/20/2017 09:15

Sample wt/vol: 254.6(mL) Date Analyzed: 07/25/2017 15:19

Con. Extract Vol.: 0.50 (mL) Dilution Factor: 1

Injection Volume: 2(uL) GC Column: GeminiC18 3x100 ID: 3(mm)

% Moisture: GPC Cleanup:(Y/N) N

Analysis Batch No.: 175951 Units: ng/L

CAS NO	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
376-06-7	Perfluorotetradecanoic acid (PFTeA)	1.5	JMQ	2.5	0.98	0.39

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL00998	13C2 PFDoA	87		25-150

Report Date: 26-Jul-2017 11:33:06 Chrom Revision: 2.2 26-Jun-2017 08:09:44

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170726-45877.b\2017.07.25B_011.d

Lims ID: 320-29732-A-3-A Client ID: TP-PFC-019-TPE

Sample Type: Client

Inject. Date: 25-Jul-2017 15:19:47 ALS Bottle#: 10 Worklist Smp#: 11

Injection Vol: 2.0 ul Dil. Factor: 1.0000

Sample Info: 320-29732-a-3-a Misc. Info.: Plate: 1 Rack: 4

Operator ID: SACINSTLCMS01 Instrument ID: A8_N

Method: \ChromNa\Sacramento\ChromData\A8_N\20170726-45877.b\A8_N.m

Limit Group: LC PFC_DOD ICAL

Last Update: 26-Jul-2017 11:32:34 Calib Date: 23-Jul-2017 13:58:26

Integrator: Picker

Quant Method: Isotopic Dilution Quant By: Initial Calibration

Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20170723-45765.b\2017.07.23ICAL_010.d

Column 1: Det: EXP1

Process Host: XAWRK028

First Level Reviewer: chandrasenas Date: 26-Jul-2017 11:29:47

i iist Level Neviewel. Chandrasellas					Date. 20-3ul-2017 11.23.47					
Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 113C4 PFBA										
217.00 > 172.00		1.559	0.006		7026540	45.0		90.1	22469	
2 Perfluorobut	yric acid									
212.90 > 169.00	,	1.559	0.006	1.000	5217631	42.1			1611	
D 3 13C5-PFPe	eΑ									
267.90 > 223.00	1.775	1.778	-0.003		5396554	48.8		97.7	36133	
4 Perfluoroper										
262.90 > 219.00	1.766	1.778	-0.012	1.000	1379563	12.3			1222	
5 Perfluorobut										
298.90 > 80.00		1.806	-0.004	1.000	27913	0.1208	1 (2(0.00.0.00)		22.7	
298.90 > 99.00		1.806	-0.013	0.995	17190		1.62(0.00-0.00)		23.3	
D 7 13C2 PFHx 315.00 > 270.00		2.058	0 003		4960204	49.0		98.1	24736	
6 Perfluorohex			-0.003		4700204	47.0		70.1	24730	
313.00 > 269.00			-0.014	1.000	310363	3.29			620	
D 9 13C4-PFHp			0.0		0.000	0.27			020	
367.00 > 322.00		2.393	0.001		5136104	61.3		123	25437	
10 Perfluorohe	ptanoic a	acid								
363.00 > 319.00	-	2.393	0.001	1.000	6741	0.0639			16.1	
D 11 1802 PFH:	xS									
403.00 > 84.00	2.411	2.409	0.002		7337720	53.4		113	32303	
8 Perfluorohex										
399.00 > 80.00	2.411	2.409	0.002	1.000	44595	0.2657			76.2	
D 14 13C4 PFO										
417.00 > 372.00		2.756	0.003		4618749	56.2		112	23857	
* 62 13C2-PFO		0.757	0.004		2004	F0.0			105	
415.00 > 370.00	2.752	2.756	-0.004		3091	50.0			125	

Report Date: 26-Jul-2017 11:33:06 Chrom Revision: 2.2 26-Jun-2017 08:09:44 Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170726-45877.b\2017.07.25B_011.d

	Data File: \(\ChromNa\Sacramento\ChromData\A8_N\20170726-45877.b\2017.07.25B_011.d\)										
	Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
,	15 Perfluorooct	anoic ac	cid								
	413.00 > 369.00	2.759	2.756	0.003	1.000	34612	0.3512			12.4	
	413.00 > 169.00	2.759	2.756	0.003	1.000	25951		1.33(0.90-1.10)		109	
	D 19 13C5 PFNA										
	468.00 > 423.00	3.133	3.131	0.002		3105058	47.2		94.5	16656	
	D 18 13C4 PFOS										
	503.00 > 80.00	3.133	3.131	0.002		5150147	47.6		99.6	17241	
	20 Perfluoronor										
	463.00 > 419.00	3.034	3.140	-0.106	1.000	1234	0.0195			2.8	
	D 21 13C8 FOS										
	506.00 > 78.00	3.484	3.487	-0.003		103974	0.5688		1.1	1843	
	D 23 13C2 PFD/										
	515.00 > 470.00	3.493	3.497	-0.004		3039801	54.4		109	9361	
	24 Perfluorodeo										
	513.00 > 469.00	3.493	3.497	-0.004	1.000	2347	0.0394			18.2	
	29 Perfluorodeo										
	599.00 > 80.00	3.801	3.803	-0.002	1.000	2977	0.0444			119	
	31 Perfluoround										
	563.00 > 519.00	3.818	3.822	-0.004	1.000	11684	0.1595			27.5	
	D 30 13C2 PFUr										
	565.00 > 520.00	3.818	3.822	-0.004		2147777	52.7		105	6857	
	37 Perfluorodoo										
	613.00 > 569.00	4.115	4.116	-0.001	1.000	7523	0.2084			16.2	
	D 36 13C2 PFD	ρA									
	615.00 > 570.00	4.115	4.116	-0.001		1942537	43.5		87.0	3683	
	41 Perfluorotrid	ecanoic	acid								
	663.00 > 619.00	4.375	4.380	-0.005	1.000	8454	0.2556			4.0	
	42 Perfluorotetr	adecan	oic acid								M
	712.50 > 668.90		4.614	0.028	1.000	55698	0.7459			4.4	M
	713.00 > 169.00	4.612	4.614	-0.002	0.993	5853		9.52(0.00-0.00)		125	

QC Flag Legend Review Flags

M - Manually Integrated

Report Date: 26-Jul-2017 11:33:06 Chrom Revision: 2.2 26-Jun-2017 08:09:44 TestAmerica Sacramento Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170726-45877.b\2017.07.25B_011.d **Injection Date:** 25-Jul-2017 15:19:47 Instrument ID: A8_N Lims ID: 320-29732-A-3-A Lab Sample ID: 320-29732-3 Client ID: TP-PFC-019-TPE Operator ID: SACINSTLCMS01 ALS Bottle#: 10 Worklist Smp#: 11 Dil. Factor: Injection Vol: 2.0 ul 1.0000 LC PFC_DOD ICAL Method: $A8_N$ Limit Group: D 113C4 PFBA 2 Perfluorobutyric acid D 3 13C5-PFPeA Exp1:m/z 212.90 > 169.00:Moving5PtAverage_x | Exp1:m/z 267.90 > 223.00:Moving5PtAverage_x Exp1:m/z 217.00 > 172.00:Moving5PtAverage_> (00030 X25 (00024 × 16 ≻20 12 15 10 1.2 1.1 1.4 1.7 2.0 0.9 1.8 2.1 1.0 1.3 1.6 2.5 5 Perfluorobutanesulfonic acid 4 Perfluoropentanoic acid 5 Perfluorobutanesulfonic acid Exp1:m/z 262.90 > 219.00:Moving5PtAverage_x Exp1:m/z 298.90 > 80.00:Moving5PtAverage_x3 Exp1:m/z 298.90 > 99.00:Moving5PtAverage_x3 84 642 00 02 35 (18-(00015-X) 12-672 ×60 ∑₂₈ ≻48 21 36 24 12 1.8 1.9 2.2 2.5 1.2 1.5 2.1 2.4 1.9 1.0 1.3 1.6 2.2 1.6 1.3 7 13C2 PFHxA 6 Perfluorohexanoic acid 9 13C4-PFHpA Exp1:m/z 315.00 > 270.00:Moving5PtAverage_x Exp1:m/z 313.00 > 269.00:Moving5PtAverage_ Exp1:m/z 367.00 > 322.00:Moving5PtAverage_x (21°000018° ×15° 70 (00020 ×16 <u>660</u> ∑50 ≻40 30 20 10 1.9 2.2 1.5 1.8 2.1 2.7 2.0 2.9 1.6 2.5 2.8 2.4 1.7 2.3 1.2 2.6 8 Perfluorohexanesulfonic acid 10 Perfluoroheptanoic acid D 11 1802 PFHxS Exp1:m/z 363.00 > 319.00:Moving5PtAverage_> Exp1:m/z 403.00 > 84.00:Moving5PtAverage_x3 Exp1:m/z 399.00 > 80.00:Moving5PtAverage_x3 43 21 ()30 ()25 618 60 15 × 10 13 1 0 2.4 2.7 1.8 2.1 2.4 2.7 3.0 2.1 1.7

Chrom Revision: 2.2 26-Jun-2017 08:09:44

3.5

3.8

4.1

2.7

3.0

3.3

3.6

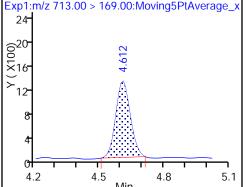
3.9

2.9

3.2

2.8

3.1



Report Date: 26-Jul-2017 11:33:07 Chrom Revision: 2.2 26-Jun-2017 08:09:44 Manual Integration/User Assign Peak Report

TestAmerica Sacramento

Data File: \ChromNa\Sacramento\ChromData\A8_N\20170726-45877.b\2017.07.25B_011.d

Injection Date: 25-Jul-2017 15:19:47 Instrument ID: A8_N

Lims ID: 320-29732-A-3-A Lab Sample ID: 320-29732-3

Client ID: TP-PFC-019-TPE

Operator ID: SACINSTLCMS01 ALS Bottle#: 10 Worklist Smp#: 11

Injection Vol: 2.0 ul Dil. Factor: 1.0000

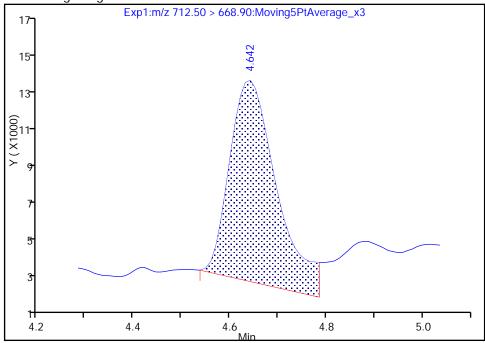
Method: A8_N Limit Group: LC PFC_DOD ICAL

Column: Detector EXP1

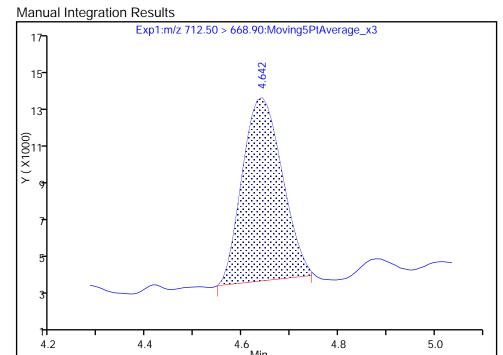
42 Perfluorotetradecanoic acid, CAS: 376-06-7

Signal: 1

RT: 4.64 Area: 71998 Amount: 0.964181 Amount Units: ng/ml **Processing Integration Results**



RT: 4.64
Area: 55698
Amount: 0.745895
Amount Units: ng/ml



Reviewer: chandrasenas, 26-Jul-2017 11:29:35

Audit Action: Manually Integrated

Audit Reason: Baseline

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FORM I LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-29732-1

SDG No.:

Client Sample ID: TP-PFC-019-TPE-D Lab Sample ID: 320-29732-4

Matrix: Water Lab File ID: 2017.07.21C_019.d

Analysis Method: 537 (Modified) Date Collected: 07/06/2017 00:00

Extraction Method: 3535 Date Extracted: 07/18/2017 07:22

Sample wt/vol: 258.4 (mL) Date Analyzed: 07/21/2017 21:06

Con. Extract Vol.: 0.50 (mL) Dilution Factor: 1

Injection Volume: 2(uL) GC Column: GeminiC18 3x100 ID: 3(mm)

% Moisture: GPC Cleanup:(Y/N) N

Analysis Batch No.: 175462 Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
375-22-4	Perfluorobutanoic acid (PFBA)	82		2.4	0.97	0.44
2706-90-3	Perfluoropentanoic acid (PFPeA)	24		2.4	1.9	0.96
307-24-4	Perfluorohexanoic acid (PFHxA)	6.4		2.4	1.9	0.76
375-85-9	Perfluoroheptanoic acid (PFHpA)	1.9	Ū	2.4	1.9	0.78
335-67-1	Perfluorooctanoic acid (PFOA)	1.9	U M	2.4	1.9	0.72
375-95-1	Perfluorononanoic acid (PFNA)	1.9	Ū	2.4	1.9	0.63
335-76-2	Perfluorodecanoic acid (PFDA)	0.97	Ū	2.4	0.97	0.43
2058-94-8	Perfluoroundecanoic acid (PFUnA)	1.9	Ū	2.4	1.9	0.72
307-55-1	Perfluorododecanoic acid (PFDoA)	1.9	Ū	2.4	1.9	0.57
72629-94-8	Perfluorotridecanoic Acid (PFTriA)	1.9	Ū	2.4	1.9	0.53
376-06-7	Perfluorotetradecanoic acid (PFTeA)	0.97	Ū	2.4	0.97	0.39
375-73-5	Perfluorobutanesulfonic acid (PFBS)	1.9	Ū	2.4	1.9	0.89
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	1.9	Ū	2.4	1.9	0.84
375-92-8	Perfluoroheptanesulfonic Acid (PFHpS)	1.9	Ū	2.4	1.9	0.69
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	2.9	Ū	3.9	2.9	1.2
335-77-3	Perfluorodecanesulfonic acid (PFDS)	2.9	U	3.9	2.9	1.2
754-91-6	Perfluorooctane Sulfonamide (FOSA)	1.9	U	39	1.9	0.62

FORM I LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-29732-1

SDG No.:

Client Sample ID: TP-PFC-019-TPE-D Lab Sample ID: 320-29732-4

Matrix: Water Lab File ID: 2017.07.21C_019.d

Analysis Method: 537 (Modified) Date Collected: 07/06/2017 00:00

Extraction Method: 3535 Date Extracted: 07/18/2017 07:22

Sample wt/vol: 258.4 (mL) Date Analyzed: 07/21/2017 21:06

Con. Extract Vol.: 0.50 (mL) Dilution Factor: 1

Injection Volume: 2(uL) GC Column: GeminiC18 3x100 ID: 3(mm)

% Moisture: GPC Cleanup:(Y/N) N

Analysis Batch No.: 175462 Units: ng/L

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL01056	13C8 FOSA	0.3	Q	25-150
STL00992	13C4 PFBA	96		25-150
STL00993	13C2 PFHxA	98		25-150
STL00990	13C4 PFOA	111		25-150
STL00995	13C5 PFNA	91		25-150
STL00996	13C2 PFDA	85		25-150
STL00997	13C2 PFUnA	67		25-150
STL00998	13C2 PFDoA	70		25-150
STL00994	1802 PFHxS	106		25-150
STL00991	13C4 PFOS	100		25-150
STL01892	13C4-PFHpA	118		25-150
STL01893	13C5 PFPeA	98		25-150

Report Date: 24-Jul-2017 16:31:40 Chrom Revision: 2.2 26-Jun-2017 08:09:44

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170722-45761.b\2017.07.21C_019.d

Lims ID: 320-29732-A-4-A Client ID: TP-PFC-019-TPE-D

Sample Type: Client

Inject. Date: 21-Jul-2017 21:06:07 ALS Bottle#: 16 Worklist Smp#: 5

Injection Vol: 2.0 ul Dil. Factor: 1.0000

Sample Info: 320-29732-a-4-a Misc. Info.: Plate: 1 Rack: 4

Operator ID: SACINSTLCMS01 Instrument ID: A8_N

Method: \ChromNa\Sacramento\ChromData\A8_N\20170722-45761.b\A8_N.m

Limit Group: LC PFC_DOD ICAL

Last Update: 24-Jul-2017 16:31:26 Calib Date: 20-Jul-2017 18:04:17

Integrator: Picker

Quant Method: Isotopic Dilution Quant By: Initial Calibration

Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20170720-45703.b\2017.07.20ICAL_010.d

Column 1: Det: EXP1

Process Host: XAWRK004

First Level Reviewer: chandrasenas Date: 24-Jul-2017 16:06:29

i iist Level Neviewel, chandrasellas				Date.		F-Jul-2017 10.00.27				
Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 113C4 PFBA										
217.00 > 172.00	1.537	1.537	-0.001		8636797	48.0		96.0	22592	
2 Perfluorobuty	•									
212.90 > 169.00		1.537	-0.001	1.000	6685274	42.5			2274	
D 3 13C5-PFPe 267.90 > 223.00		1.727	0.009		5857967	49.0		98.0	36241	
4 Perfluoropen										
262.90 > 219.00	1.727	1.737	-0.009	1.000	1467902	12.6			1176	
5 Perfluorobuta			0.004	4 000	074/0	0.4404			00.0	
298.90 > 80.00 298.90 > 99.00		1.755 1.755	-0.001 -0.001	1.000 1.000	27462 16601	0.1134	1.65(0.00-0.00)		20.9 20.4	
D 7 13C2 PFHx							(,			
315.00 > 270.00	1.994	1.994	0.0		5414023	49.0		98.1	25844	
6 Perfluorohex			0.044	1 000	225272	0.04			504	
313.00 > 269.00		1.994	-0.011	1.000	335960	3.31			584	
D 9 13C4-PFHp 367.00 > 322.00		2.316	0.001		5754274	59.1		118	21435	
10 Perfluoroher	otanoic a	acid								
363.00 > 319.00	2.309	2.316	-0.007	1.000	11401	0.0982			19.8	
8 Perfluorohex				1 000	24402	0.1070			42.0	
399.00 > 80.00 D 11 18O2 PFH)		2.324	0.001	1.000	34482	0.1978			42.0	
403.00 > 84.00		2.332	-0.007		8056880	50.2		106	23423	
* 62 13C2-PFOA	١									
415.00 > 370.00	2.655	2.656	-0.001		2969	50.0			101	
D 14 13C4 PFO		2757	0.007		40/0017			111	22000	
417.00 > 372.00	2.662	2.656	0.006		4869917	55.5		111	23900	

Report Date: 24-Jul-2017 16:31:40
Data File: \ChromNa\Sac Chrom Revision: 2.2 26-Jun-2017 08:09:44 \\ChromNa\Sacramento\ChromData\A8_N\\20170722-45761_h\2017_07_21C_019_d

	Data File:	File: \\ChromNa\Sacramento\ChromData\A8_N\20170722-45761.b\2017.07.21C_019.d									
	Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
15 Perfluorooctanoic acid										M	
	413.00 > 369.00		2.663	-0.001	1.000	28031	0.2751			6.7	M
	413.00 > 169.00			-0.001	1.000	21039		1.33(0.90-1.10)		85.6	M
	16 Perfluoroher				1 000	0000	0.04/5				
	449.00 > 80.00		2.670	0.0	1.000	2298	0.0165			66.0	
	20 Perfluoronor 463.00 > 419.00			-0.003	1.000	1495	0.0237			2.9	
	D 18 13C4 PFO		3.027	-0.003	1.000	1473	0.0237			2.7	
	503.00 > 80.00		3.029	-0.003		5655596	47.9		100	25690	
	D 19 13C5 PFNA										
	468.00 > 423.00		3.029	-0.003		3148816	45.4		90.9	18046	
	24 Perfluorodeo	canoic a	cid								
	513.00 > 469.00	3.381	3.380	0.001	1.000	3020	0.0628			17.0	
	D 23 13C2 PFD/										
	515.00 > 470.00		3.380	0.001		2569669	42.5		84.9	11825	
	D 21 13C8 FOSA		2 200	0.001		21270	0.1502		0.2	F 40	
	506.00 > 78.00		3.388	0.001		31279	0.1593		0.3	540	
	31 Perfluoround 563.00 > 519.00		3.709	0.0	1.000	4782	-0.0143			12.0	
	D 30 13C2 PFUr		3.707	0.0	1.000	4702	-0.0143			12.0	
	565.00 > 520.00		3.709	0.0		1399133	33.3		66.6	5881	
	D 36 13C2 PFD										
	615.00 > 570.00		4.004	-0.009		1525906	35.0		70.1	3923	
	37 Perfluorodo	decanoio	acid								
	613.00 > 569.00	4.002	4.004	-0.002	1.000	1228	0.0426			4.0	
	41 Perfluorotrid										
	663.00 > 619.00	4.265	4.266	-0.001	1.000	2191	0.0843			1.5	

QC Flag Legend Review Flags

M - Manually Integrated

Report Date: 24-Jul-2017 16:31:40 Chrom Revision: 2.2 26-Jun-2017 08:09:44 TestAmerica Sacramento Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170722-45761.b\2017.07.21C_019.d **Injection Date:** 21-Jul-2017 21:06:07 Instrument ID: A8_N Lims ID: 320-29732-A-4-A Lab Sample ID: 320-29732-4 TP-PFC-019-TPE-D Client ID: Operator ID: SACINSTLCMS01 ALS Bottle#: 16 Worklist Smp#: 5 Dil. Factor: 1.0000 Injection Vol: 2.0 ul LC PFC_DOD ICAL Method: $A8_N$ Limit Group: D 113C4 PFBA 2 Perfluorobutyric acid D 3 13C5-PFPeA Exp1:m/z 217.00 > 172.00:Moving5PtAverage_x Exp1:m/z 212.90 > 169.00:Moving5PtAverage_x Exp1:m/z 267.90 > 223.00:Moving5PtAverage_x 35- (000001X) 30 00000 0000 25 X ©28 ©24 -24 18 15 12 10 1.2 1.5 1.7 2.0 0.9 1.8 2.1 1.2 1.5 1.8 2.1 5 Perfluorobutanesulfonic acid 4 Perfluoropentanoic acid 5 Perfluorobutanesulfonic acid Exp1:m/z 298.90 > 80.00:Moving5PtAverage_x3 Exp1:m/z 262.90 > 219.00:Moving5PtAverage_x Exp1:m/z 298.90 > 99.00:Moving5PtAverage_x3 77 (00042 ×35 (18-(00015-X) 12-<u>666</u> ×55 ≻28 21 33 22 2.3 2.3 1.7 2.0 1.4 1.7 2.0 1.6 1.9 2.2 1.4 1.1 1.1 1.3 7 13C2 PFHxA 6 Perfluorohexanoic acid 9 13C4-PFHpA Exp1:m/z 315.00 > 270.00:Moving5PtAverage_x Exp1:m/z 313.00 > 269.00:Moving5PtAverage_ Exp1:m/z 367.00 > 322.00:Moving5PtAverage_x 24 (00020 ×16 024 0020 84 ©72 ×60 ×₁₆ ≻₄₈-36 24 12 1.8 2.1 1.7 2.0 2.6 1.9 1.5 2.4 1.4 2.3 1.6 2.5 2.8 10 Perfluoroheptanoic acid 8 Perfluorohexanesulfonic acid D 11 1802 PFHxS Exp1:m/z 363.00 > 319.00:Moving5PtAverage_> Exp1:m/z 399.00 > 80.00:Moving5PtAverage_x3 Exp1:m/z 403.00 > 84.00:Moving5PtAverage_x3 35 0030 25 36 (12⁻ (00010⁻ X) 8 0030 × × >24 <u>_</u>20 18 15 12 10 0 0 <u>10</u>4^{2.6} 2.0 2.3 2.6 2.9 1.7 2.9 1.9 2.2 2.5 2.8 1.7 1.6

3.3

3.6

2.7

3.0

3.6

3.9

0

3.0

01 - 2.3

2.6

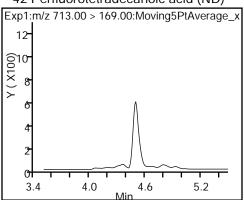
2.9

3.2

3.5

3.8

Report Date: 24-Jul-2017 16:31:40 Chrom Revision: 2.2 26-Jun-2017 08:09:44 Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170722-45761.b\2017.07.21C_019.d D 21 13C8 FOSA 22 Perfluorooctane Sulfonamide (ND) 29 Perfluorodecane Sulfonic acid (ND) Exp1:m/z 506.00 > 78.00:Moving5PtAverage_x3 Exp1:m/z 498.00 > 78.00:Moving5PtAverage_x3 Exp1:m/z 599.00 > 80.00:Moving5PtAverage_x3 70 (12° (00010° (10° (10°) 60 Y (X100) € 50-_ ≻40⁻ 30 20 10 3.2 2.9 3.2 3.5 3.8 2.3 2.9 3.5 4.1 2.6 3.8 4.4 31 Perfluoroundecanoic acid D 30 13C2 PFUnA D 36 13C2 PFDoA Exp1:m/z 563.00 > 519.00:Moving5PtAverage_x Exp1:m/z 615.00 > 570.00:Moving5PtAverage_x Exp1:m/z 565.00 > 520.00:Moving5PtAverage_> 63 63 654 30 0054 ×45 0025 × >20 ∑36- 15 27 27 10 18 18 4.0 3.9 3.3 3.6 3.9 4.2 3.7 4.3 3.6 37 Perfluorododecanoic acid 41 Perfluorotridecanoic acid 42 Perfluorotetradecanoic acid (ND) Exp1:m/z 613.00 > 569.00:Moving5PtAverage_x Exp1:m/z 663.00 > 619.00:Moving5PtAverage_> Exp1:m/z 712.50 > 668.90:Moving5PtAverage_x 12 15 X (X1000) 0012-× × × 9 ©15- ×13-3 0 0 3.9 4.2 Mi 5.2 4.0 4.3 4.5 4.0 3.7 3.4 4.6 42 Perfluorotetradecanoic acid (ND) 12



Report Date: 24-Jul-2017 16:31:40 Chrom Revision: 2.2 26-Jun-2017 08:09:44 Manual Integration/User Assign Peak Report

TestAmerica Sacramento

Data File: \ChromNa\Sacramento\ChromData\A8_N\20170722-45761.b\2017.07.21C_019.d

Injection Date: 21-Jul-2017 21:06:07 Instrument ID: A8_N

Lims ID: 320-29732-A-4-A Lab Sample ID: 320-29732-4

Client ID: TP-PFC-019-TPE-D

Operator ID: SACINSTLCMS01 ALS Bottle#: 16 Worklist Smp#: 5

Injection Vol: 2.0 ul Dil. Factor: 1.0000

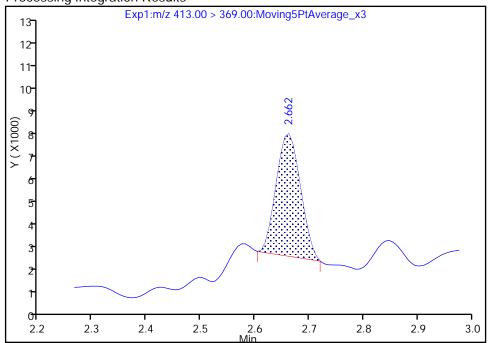
Method: A8_N Limit Group: LC PFC_DOD ICAL

Column: Detector EXP1

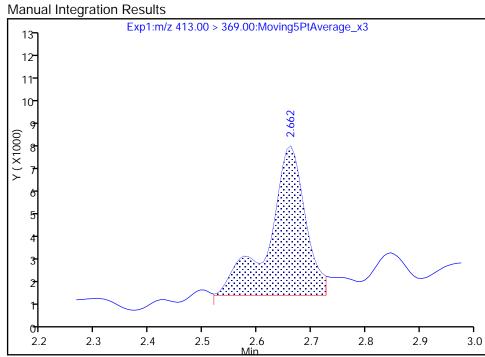
15 Perfluorooctanoic acid, CAS: 335-67-1

Signal: 1

RT: 2.66 Area: 15251 Amount: 0.149659 Amount Units: ng/ml **Processing Integration Results**



RT: 2.66
Area: 28031
Amount: 0.275069
Amount Units: ng/ml



Reviewer: chandrasenas, 24-Jul-2017 16:05:56

Audit Action: Manually Integrated

Audit Reason: Isomers

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Report Date: 24-Jul-2017 16:31:40 Chrom Revision: 2.2 26-Jun-2017 08:09:44 Manual Integration/User Assign Peak Report

TestAmerica Sacramento

Data File: \ChromNa\Sacramento\ChromData\A8_N\20170722-45761.b\2017.07.21C_019.d

Injection Date: 21-Jul-2017 21:06:07 Instrument ID: A8_N

Lims ID: 320-29732-A-4-A Lab Sample ID: 320-29732-4

Client ID: TP-PFC-019-TPE-D

Operator ID: SACINSTLCMS01 ALS Bottle#: 16 Worklist Smp#: 5

Injection Vol: 2.0 ul Dil. Factor: 1.0000

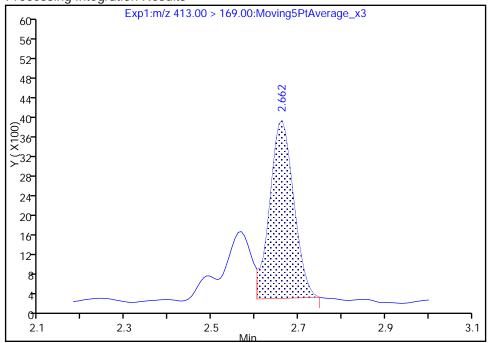
Method: A8_N Limit Group: LC PFC_DOD ICAL

Column: Detector EXP1

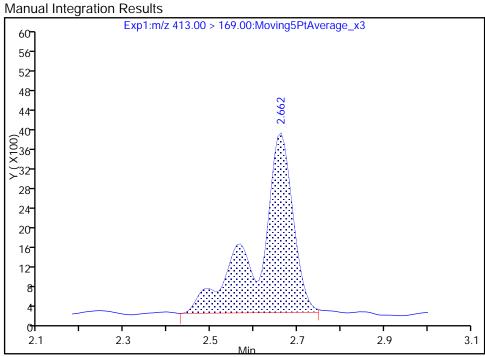
15 Perfluorooctanoic acid, CAS: 335-67-1

Signal: 2

RT: 2.66 Area: 13934 Amount: 0.149659 Amount Units: ng/ml **Processing Integration Results**



RT: 2.66
Area: 21039
Amount: 0.275069
Amount Units: ng/ml



Reviewer: chandrasenas, 24-Jul-2017 16:06:02

Audit Action: Manually Integrated

Audit Reason: Isomers

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FORM I LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-29732-1

SDG No.:

Client Sample ID: TP-PFC-019-TPE-D RE Lab Sample ID: 320-29732-4 RE

Matrix: Water Lab File ID: 2017.07.27C_014.d

Analysis Method: 537 (Modified) Date Collected: 07/06/2017 00:00

Extraction Method: 3535 Date Extracted: 07/25/2017 09:58

Sample wt/vol: 245.5(mL) Date Analyzed: 07/27/2017 22:18

Con. Extract Vol.: 0.50 (mL) Dilution Factor: 1

Injection Volume: 2(uL) GC Column: GeminiC18 3x100 ID: 3(mm)

% Moisture: GPC Cleanup:(Y/N) N

Analysis Batch No.: 176487 Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
754-91-6	Perfluorooctane Sulfonamide (FOSA)	2.0	U H	41	2.0	0.65

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL01056	13C8 FOSA	2	Q	25-150

Report Date: 28-Jul-2017 14:14:32 Chrom Revision: 2.2 26-Jun-2017 08:09:44

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170728-45994.b\2017.07.27C_014.d

Lims ID: 320-29732-C-4-A Client ID: TP-PFC-019-TPE-D

Sample Type: Client

Inject. Date: 27-Jul-2017 22:18:32 ALS Bottle#: 36 Worklist Smp#: 14

Injection Vol: 2.0 ul Dil. Factor: 1.0000

Sample Info: 320-29732-c-4-a Misc. Info.: Plate: 1 Rack: 3

Operator ID: SACINSTLCMS01 Instrument ID: A8_N

Method: \ChromNa\Sacramento\ChromData\A8_N\20170728-45994.b\A8_N.m

Limit Group: LC PFC_DOD ICAL

Last Update: 28-Jul-2017 14:14:28 Calib Date: 23-Jul-2017 13:58:26

Integrator: Picker

Quant Method: Isotopic Dilution Quant By: Initial Calibration

Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20170723-45765.b\2017.07.23ICAL_010.d

Column 1: Det: EXP1

Process Host: XAWRK013

First Level Reviewer: chandrasenas Date: 28-Jul-2017 11:41:06

First Level Revie	wer: cha	ndraser	ıas		Date:	2	28-Jul-2017 11:41:06)		
Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
2 Perfluorobuty	vric acid									
212.90 > 169.00	•	1.565	-0.002	1.000	6280373	40.9			1998	
D 113C4 PFBA										
217.00 > 172.00	1.563	1.565	-0.002		8715084	55.9		112	19345	
4 Perfluoropen										
262.90 > 219.00		1.784	-0.012	1.000	1532769	11.7			1392	
D 3 13C5-PFPe 267.90 > 223.00		1.784	0.002		4070014	E4 0		111	27400	
			-0.002		6272214	56.8		114	27400	N //
5 Perfluorobuta 298.90 > 80.00		1.812	-0.012	1.000	23476	0.0982			17.1	M
	1.800	1.812	-0.012	1.000	7316	0.0702	3.21(0.00-0.00)		12.4	M
6 Perfluorohex	anoic ac	id								
313.00 > 269.00	2.040	2.054	-0.014	1.000	340785	3.01			532	
D 7 13C2 PFHx	A									
315.00 > 270.00	2.051	2.054	-0.003		5936075	58.7		117	16429	
10 Perfluorohe										M
363.00 > 319.00		2.385	-0.011	1.000	12269	0.1016			10.9	M
D 9 13C4-PFHp 367.00 > 322.00		2.385	0.011		5881752	70.2		140	14911	
			-0.011		3661732	70.2		140	14911	
8 Perfluorohex 399.00 > 80.00		2.401		1.000	32816	0.1890			42.5	
D 11 18O2 PFH		2.401	0.011	1.000	32010	0.1070			72.0	
403.00 > 84.00		2.401	-0.011		7592560	55.2		117	22953	
* 62 13C2-PFOA										
415.00 > 370.00		2.733	-0.008		3566	50.0			115	
15 Perfluorooct	anoic ac	cid								М
413.00 > 369.00		2.740	-0.008	1.000	19001	0.1650			6.3	
413.00 > 169.00	2.732	2.740	-0.008	1.000	21196		0.90(0.90-1.10)		101	M
					D 504 (4	404				

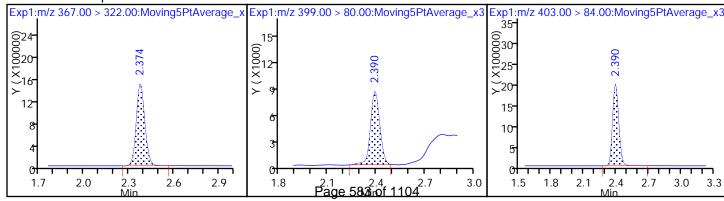
Report Date: 28-Jul-2017 14:14:32 Chrom Revision: 2.2 26-Jun-2017 08:09:44 Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170728-45994.b\2017.07.27C_014.d

	Data File:	NCIIIC	minas	acrament		Dala (A8_IN\201	70728-45994	4.D\2017.07.27C_01	4.0		
	Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
-	D 14 13C4 PFO	Δ									
	417.00 > 372.00		2.740	-0.008		5396922	65.7		131	16855	
	D 19 13C5 PFN/	А									
	468.00 > 423.00		3.111	-0.003		3498302	53.2		106	13439	
-	D 18 13C4 PFO	S									
	503.00 > 80.00	3.108	3.111	-0.003		5517267	51.0		107	24880	
	D 21 13C8 FOS	A									
	506.00 > 78.00	3.462	3.454	0.008		159718	0.8737		1.7	1845	
	24 Perfluorode	canoic a	cid								M
	513.00 > 469.00	3.480	3.474	0.006	1.000	3500	0.0511			15.1	M
	D 23 13C2 PFD/										
	515.00 > 470.00	3.471	3.474	-0.003		3495054	62.6		125	11210	
	31 Perfluoround				1 000	7570	0.04/0			00 (
	563.00 > 519.00		3.797	0.0	1.000	7572	0.0460			20.6	
	D 30 13C2 PFUr		0.707	0.0		0.400040	50.7		110	(101	
	565.00 > 520.00		3.797	0.0		2433012	59.7		119	6481	
	D 36 13C2 PFD0		4 000	0.000		2240020	EO 0		102	1241	
	615.00 > 570.00	4.09/	4.088	0.009		2269038	50.8		102	4361	

QC Flag Legend Review Flags

M - Manually Integrated

Report Date: 28-Jul-2017 14:14:32 Chrom Revision: 2.2 26-Jun-2017 08:09:44 TestAmerica Sacramento \ChromNa\Sacramento\ChromData\A8_N\20170728-45994.b\2017.07.27C_014.d Data File: **Injection Date:** 27-Jul-2017 22:18:32 Instrument ID: A8_N Lims ID: 320-29732-C-4-A Lab Sample ID: 320-29732-4 TP-PFC-019-TPE-D Client ID: Operator ID: SACINSTLCMS01 ALS Bottle#: 36 Worklist Smp#: 14 Injection Vol: Dil. Factor: 1.0000 2.0 ul Method: LC PFC_DOD ICAL $A8_N$ Limit Group: 2 Perfluorobutyric acid D 113C4 PFBA 4 Perfluoropentanoic acid Exp1:m/z 212.90 > 169.00:Moving5PtAverage_x Exp1:m/z 217.00 > 172.00:Moving5PtAverage_x Exp1:m/z 262.90 > 219.00:Moving5PtAverage_x ©28 0024 ©36-0030-649 642 ∑20 ≻28 18 21 12 14 1.1 1.7 2.3 1.1 1.4 2.0 2.3 1.2 1.5 1.8 2.1 5 Perfluorobutanesulfonic acid 5 Perfluorobutanesulfonic acid (M) 3 13C5-PFPeA Exp1:m/z 298.90 > 80.00:Moving5PtAverage_x3 Exp1:m/z 298.90 > 99.00:Moving5PtAverage x3 Exp1:m/z 267.90 > 223.00:Moving5PtAverage_x 50 ©28 00 24 Y (X1000) 643 ×36 ×20 12 15 2.0 1.3 1.9 2.2 2.5 1.7 1.8 1.0 1.6 1.4 1.5 2.1 6 Perfluorohexanoic acid 7 13C2 PFHxA 10 Perfluoroheptanoic acid (M) D _____ Exp1:m/z 315.00 > 270.00:Moving5PtAverage_x 281 Exp1:m/z 313.00 > 269.00:Moving5PtAverage_ Exp1:m/z 363.00 > 319.00:Moving5PtAverage_x 54 84 00024- 072 260 260 647- ×40-∑₁₆->48 12 26 36 24 19 1.9 2.2 2.8 1.9 2.8 2.3 1.6 2.5 1.3 1.6 2.2 2.5 2.0 2.6 9 13C4-PFHpA 8 Perfluorohexanesulfonic acid D 11 1802 PFHxS Exp1:m/z 367.00 > 322.00:Moving5PtAverage_x Exp1:m/z 399.00 > 80.00:Moving5PtAverage_x3 Exp1:m/z 403.00 > 84.00:Moving5PtAverage_x3 35 024 0020



Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170728-45994.b\2017.07.27C_014.d

Chrom Revision: 2.2 26-Jun-2017 08:09:44

Report Date: 28-Jul-2017 14:14:32

Chrom Revision: 2.2 26-Jun-2017 08:09:44

0 3.5

4.1

4.7

5.3

LCMS BY EXTERNAL STANDARD - INITIAL CALIBRATION DATA RETENTION TIME SUMMARY

Lab Name: TestAmerica Sacramento

SDG No.:

Instrument ID: A8_N

GC Column: GeminiC18 3 ID: 3(mm)

Calibration Start Date: 07/20/2017 17:15

Calibration End Date: 07/20/2017 18:04

Analy Batch No.: 175252

Heated Purge: (Y/N) N

Calibration ID: 32643

Calibration Files:

LEVEL:	LAB SAMPLE ID:	LAB FILE ID:
Level 1	IC 320-175252/3	2017.07.20ICAL 003.d
Level 2	IC 320-175252/4	2017.07.20ICAL 004.d
Level 3	IC 320-175252/5	2017.07.20ICAL 005.d
Level 4	IC 320-175252/6	2017.07.20ICAL 006.d
Level 5	IC 320-175252/7	2017.07.20ICAL 007.d
Level 6	IC 320-175252/8	2017.07.20ICAL 008.d
Level 7	IC 320-175252/9	2017.07.20ICAL 009.d

ANALYTE	LVL 1	LVL 2	LVL 3	LVL 4	LVL 5	LVL 6	LVL 7	RT WINDOW	AVG RT
Perfluorobutanoic acid (PFBA)	1.556	1.546	1.554	1.545	1.547	1.545	1.551	1.299 - 1.799	1.549
Perfluoropentanoic acid (PFPeA)	1.766	1.755	1.763	1.745	1.747	1.745	1.751	1.503 - 2.003	1.753
Perfluorobutanesulfonic acid (PFBS)	1.784	1.782	1.791	1.773	1.775	1.772	1.778	1.599 - 1.959	1.779
4:2 FTS	1.998	1.983	1.994	1.971	1.975	1.982	1.990	1.735 - 2.235	1.985
Perfluorohexanoic acid (PFHxA)	2.032	2.029	2.028	2.017	2.021	2.017	2.024	1.774 - 2.274	2.024
Perfluoroheptanoic acid (PFHpA)	2.370	2.355	2.366	2.343	2.350	2.347	2.356	2.105 - 2.605	2.355
Perfluorohexanesulfonic acid (PFHxS)	+++++	2.371	2.374	2.359	2.366	2.363	2.373	2.119 - 2.619	2.368
6:2FTS	2.700	2.685	2.689	2.676	2.678	2.677	2.681	2.434 - 2.934	2.684
Perfluorooctanoic acid (PFOA)	2.721	2.707	2.718	2.705	2.707	2.699	2.710	2.460 - 2.960	2.710
Perfluoroheptanesulfonic Acid (PFHpS)	2.728	2.714	2.725	2.705	2.707	2.713	2.717	2.466 - 2.966	2.716
Perfluorooctanesulfonic acid (PFOS)	3.093	3.076	3.090	3.072	3.080	3.071	3.076	2.830 - 3.330	3.080
Perfluorononanoic acid (PFNA)	3.093	3.084	3.090	3.072	3.080	3.071	3.076	2.831 - 3.331	3.081
Perfluorooctane Sulfonamide (FOSA)	3.431	3.420	3.428	3.417	3.421	3.414	3.422	3.172 - 3.672	3.422
8:2FTS	3.439	3.429	3.436	3.426	3.421	3.423	3.422	3.178 - 3.678	3.428
Perfluorodecanoic acid (PFDA)	3.447	3.437	3.444	3.434	3.439	3.432	3.431	3.188 - 3.688	3.438
N-methyl perfluorooctane sulfonamidoacetic	3.613	3.600	3.609	3.597	3.598	3.590	3.590	3.350 - 3.850	3.600
acid (NMeFOSAA)									
Perfluorodecanesulfonic acid (PFDS)	3.759	3.747	3.755	3.743	3.744	3.737	3.747	3.498 - 3.998	3.747
N-ethyl perfluorooctane sulfonamidoacetic	3.778	3.766	3.775	3.763	3.764	3.756	3.757	3.516 - 4.016	3.766
acid (NEtFOSAA)									
Perfluoroundecanoic acid (PFUnA)	3.778	3.766	3.775	3.763	3.764	3.756	3.757	3.516 - 4.016	3.766
MeFOSA	3.919	3.909	3.923	3.915	3.919	3.913	3.916	3.666 - 4.166	3.916
Perfluorododecanoic acid (PFDoA)	4.071	4.064	4.065	4.055	4.062	4.047	4.052	3.809 - 4.309	4.059
N-EtFOSA-M	4.105	4.099	4.108	4.099	4.105	4.100	4.106	3.853 - 4.353	4.103
Perfluorotridecanoic Acid (PFTriA)	4.340	4.327	4.337	4.326	4.326	4.314	4.323	4.078 - 4.578	4.328
Perfluorotetradecanoic acid (PFTeA)	4.583	4.568	4.578	4.562	4.567	4.550	4.563	4.317 - 4.817	4.567
Perfluoro-n-hexadecanoic acid (PFHxDA)	+++++	4.978	4.987	4.982	4.979	4.966	4.968	4.729 - 5.229	4.977
Perfluoro-n-octadecanoic acid (PFODA)	5.340	5.321	5.329	5.326	5.317	5.306	5.309	5.071 - 5.571	5.321
13C4 PFBA	1.556	1.546	1.545	1.536	1.547	1.545	1.542	1.295 - 1.795	1.545
13C5 PFPeA	1.757	1.755	1.763	1.745	1.747	1.745	1.751	1.502 - 2.002	1.752
13C2 PFHxA	2.032	2.029	2.028	2.017	2.021	2.017	2.024	1.774 - 2.274	2.024
13C4-PFHpA	2.370	2.355	2.358	2.343	2.350	2.347	2.356	2.104 - 2.604	2.354
1802 PFHxS	2.378	2.371	2.374	2.359	2.366	2.363	2.373	2.119 - 2.619	2.369
M2-6:2FTS	2.700	2.685	2.689	2.676	2.678	2.677	2.681	2.434 - 2.934	2.684

LCMS BY EXTERNAL STANDARD - INITIAL CALIBRATION DATA RETENTION TIME SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-29732-1 Analy Batch No.: 175252

SDG No.:

Instrument ID: A8_N GC Column: GeminiC18 3 ID: 3(mm) Heated Purge: (Y/N) N

ANALYTE	LVL 1	LVL 2	LVL 3	LVL 4	LVL 5	LVL 6	LVL 7	RT WINDOW	AVG RT
13C4 PFOA	2.721	2.707	2.718	2.698	2.700	2.699	2.703	2.456 - 2.956	2.707
13C4 PFOS	3.093	3.076	3.090	3.072	3.071	3.071	3.076	2.828 - 3.328	3.078
13C5 PFNA	3.093	3.076	3.090	3.072	3.080	3.071	3.076	2.830 - 3.330	3.080
13C8 FOSA	3.431	3.420	3.428	3.417	3.421	3.414	3.422	3.172 - 3.672	3.422
M2-8:2FTS	3.439	3.429	3.436	3.426	3.421	3.423	3.422	3.178 - 3.678	3.428
13C2 PFDA	3.447	3.437	3.444	3.434	3.439	3.432	3.431	3.188 - 3.688	3.438
d3-NMeFOSAA	3.602	3.589	3.599	3.587	3.587	3.590	3.590	3.342 - 3.842	3.592
d5-NEtFOSAA	3.769	3.756	3.765	3.753	3.754	3.747	3.757	3.507 - 4.007	3.757
13C2 PFUnA	3.778	3.766	3.775	3.763	3.764	3.756	3.757	3.516 - 4.016	3.766
d-N-MeFOSA-M	3.912	3.909	3.916	3.907	3.910	3.905	3.907	3.660 - 4.160	3.909
13C2 PFDoA	4.071	4.064	4.065	4.055	4.062	4.047	4.052	3.809 - 4.309	4.059
d-N-EtFOSA-M	4.096	4.091	4.100	4.090	4.097	4.092	4.097	3.845 - 4.345	4.095
13C2-PFTeDA	4.583	4.568	4.578	4.562	4.567	4.550	4.551	4.316 - 4.816	4.566
13C2-PFHxDA	4.992	4.978	4.987	4.973	4.970	4.966	4.968	4.726 - 5.226	4.976

LCMS BY EXTERNAL STANDARD - INITIAL CALIBRATION DATA CURVE EVALUATION

Lab Name: TestAmerica Sacramento Job No.: 320-29732-1 Analy Batch No.: 175252

SDG No.:

Instrument ID: A8_N GC Column: GeminiC18 3 ID: 3(mm) Heated Purge: (Y/N) N

Calibration Files:

LEVEL:	LAB SAMPLE ID:	LAB FILE ID:	
Level 1	IC 320-175252/3	2017.07.20ICAL 003.d	
Level 2	IC 320-175252/4	2017.07.20ICAL 004.d	
Level 3	IC 320-175252/5	2017.07.20ICAL 005.d	
Level 4	IC 320-175252/6	2017.07.20ICAL 006.d	
Level 5	IC 320-175252/7	2017.07.20ICAL 007.d	
Level 6	IC 320-175252/8	2017.07.20ICAL 008.d	
Level 7	IC 320-175252/9	2017.07.20ICAL 009.d	

ANALYTE		CE	יק		CURVE		COEFFICIENT	#	MIN CF	%RSD			# MIN R^2
	LVL 1 LVL 5	LVL 2 LVL 6	LVL 3 LVL 7	LVL 4	TYPE	В	M1	M2			%RS	D OR COD	OR COD
13C4 PFBA	184012 185552	188724 167545	191598 156668	185732	Ave		179975.766			7.1	50.	0	
13C5 PFPeA	122795 124528	130582 109997	126664 100849	121600	Ave		119573.457			8.7	50.	0	
13C2 PFHxA	114823 110433	116762 102742	116882 96851	114330	Ave		110403.354			7.0	50.	0	
13C4-PFHpA	95409 103374	102587 94116	101750 82732	101240	Ave		97315.4086			7.6	50.	0	
1802 PFHxS	159078 167295	166967 156734	162565 148473	161303	Ave		160345.113			4.1	50.	0	
M2-6:2FTS	51318 53113	53061 51429	54985 52915	51250	Ave		52581.6090			2.6	50.	0	
13C4 PFOA	93593 89561	94544 76147	96123 71904	92711	Ave		87797.4314			11.0	50.	0	
13C4 PFOS	118735 120329	123509 112784	117549 112924	120440	Ave		118038.613			3.4	50.	0	
13C5 PFNA	72184 70397	73797 65028	73618 58471	71479	Ave		69282.2000			8.1	50.	0	
13C8 FOSA	207809 196759	198672 183580	210281 171947	205012	Ave		196294.226			7.1	50.	0	
M2-8:2FTS	40505 38389	41503 36290	41937 35315	40810	Ave		39249.7614			6.7	50.	0	
13C2 PFDA	64076 62969	65299 54232	66024 49314	61667	Ave		60511.5114			10.4	50.	0	
d3-NMeFOSAA	21840 23007	21552 20583	23199 21005	22482	Ave		21952.5343			4.5	50.	0	
d5-NEtFOSAA	23638 22454	23747 21205	24829 21348	23716	Ave		22990.8743			5.9	50.	0	

Note: The M1 coefficient is the same as Ave CF for an Ave curve type.

FORM VI LCMS BY EXTERNAL STANDARD - INITIAL CALIBRATION DATA CURVE EVALUATION

Lab Name: TestAmerica Sacramento Job No.: 320-29732-1 Analy Batch No.: 175252

SDG No.:

Instrument ID: A8_N GC Column: GeminiC18 3 ID: 3(mm) Heated Purge: (Y/N) N

ANALYTE		CF	r		CURVE		COEFFICIENT		#	MIN CF	%RSD	# MA		# MIN R^2
	LVL 1 LVL 5	LVL 2 LVL 6	LVL 3 LVL 7	LVL 4	TYPE	В	M1	M2				%R	SD OR COD	OR COD
13C2 PFUnA	43482 44328	46382 38330	47040 34692	39683	Ave		41991.1343				10.8	50	.0	
d-N-MeFOSA-M	51083 51227	47844 49888	51933 51332	49699	Ave		50429.4543				2.8	50	.0	
13C2 PFDoA	49998 40202	41982 42031	46572 39982	44162	Ave		43561.2200				8.4	50	.0	
d-N-EtFOSA-M	51432 51144	48396 51163	52153 50933	51166	Ave		50912.4286				2.3	50	.0	
13C2-PFTeDA	88801 79851	84941 77303	86226 71548	80617	Ave		81326.5571				7.2	50	.0	
13C2-PFHxDA	47408 41414	41944 41386	44280 37378	43594	Ave		42486.3314				7.3	50	.0	

Note: The M1 coefficient is the same as Ave CF for an Ave curve type.

FORM VI LCMS BY ISOTOPIC DILUTION - INITIAL CALIBRATION DATA CURVE EVALUATION

Lab Name: TestAmerica Sacramento Job No.: 320-29732-1 Analy Batch No.: 175252

SDG No.:

Instrument ID: A8_N GC Column: GeminiC18 3 ID: 3(mm) Heated Purge: (Y/N) N

ANALYTE			RRF			CURVE		COEFFICIE	NT :	MIN RRF	%RSD	 MAX	R^2		MIN R^2
	LVL 1	LVL 2	LVL 3	LVL 4	LVL 5	TYPE	В	M1	M2			∂RSD	OR COD		OR COD
	LVL 6	LVL 7													
Perfluorobutanoic acid (PFBA)	1.0150		0.9659	0.9226	0.8977	AveID		0.9107			10.1	35.0			
	0.8556														
Perfluoropentanoic acid (PFPeA)	1.0871		1.0552	1.0646	0.9902	AveID		0.9975			7.6	35.0			
	0.9743														
Perfluorobutanesulfonic acid (PFBS)	1.6953		1.6070	1.5054	1.3629	AveID		1.4217			14.3	50.0			
4.0.7770	1.2825	1.0944	0 0000	1 0500	0 0700			0.0700			0.6	25 0			
4:2 FTS	1.1137		0.9398	1.0533	0.9729	AvelD		0.9700			9.6	35.0			
Perfluorohexanoic acid (PFHxA)	1.0814		0.9100	0.9357	0.9369	7 TO TD		0.9374			7.1	35.0			
reilluoionexanoic acid (PrhxA)	0.9008		0.9100	0.933/	0.9369	Avein		0.93/4			/.1	33.0			
Perfluoroheptanoic acid (PFHpA)	1.0945		0.9982	1.0358	0.9774	AveTD		1.0092			4.6	35.0			
, ,	0.9939														
Perfluorohexanesulfonic acid (PFHxS)	+++++	1.1086	1.0586	1.0369	0.9681	AveID		1.0232			5.5	35.0			
	1.0013	0.9657													
6:2FTS	0.9957		0.8665	0.9000	0.8382	AveID		0.8582			8.9	35.0			
	0.8067														
Perfluorooctanoic acid (PFOA)	1.1331		1.0415	1.0347	1.0191	AveID		1.0463			4.3	35.0			
	1.0736														
Perfluoroheptanesulfonic Acid (PFHpS)	1.2356		1.2622	1.2396	1.1926	AveID		1.1737			7.6	50.0			
	1.1769		1 0000	4 0404	0.0500	<u> </u>		1 0011				0.5.0			
Perfluorooctanesulfonic acid (PFOS)	1.0995		1.0806	1.0121	0.9593	AveID		1.0341			4.7	35.0			
D. Cl	1.0598	1.0209	1.0417	1.0132	0.9799	7 . TD		1 0000			1	35.0			
Perfluorononanoic acid (PFNA)	1.0772	0.9533	1.041/	1.0132	0.9799	Avein		1.0000			4.6	35.0			
Perfluorooctane Sulfonamide (FOSA)	1.0534		0.9460	0.9215	0.9319	7 TO TD		0.9235			8.3	35.0			
Ferriuorooctane Surronamide (FOSA)	0.8759	0.8006	0.9460	0.9213	0.9319	Avein		0.9233			0.3	33.0			
8:2FTS	1.0777	0.8000	0.9582	0.8885	0.8781	ΔτεΤΠ		0.9182			9.0	35.0			
0.2110	0.8385	0.8492	0.3302	0.0005	0.0701	110010		0.5102]	55.0			
Perfluorodecanoic acid (PFDA)	0.9949		0.9469	0.9647	0.8831	AveTD		0.9359			4.1	35.0			
	0.9184														
N-methyl perfluorooctane	0.9585	0.8112	0.8886	0.9039	0.8937	AveID		0.9079			5.7	35.0			
sulfonamidoacetic acid (NMeFOSAA)	0.9529														
Perfluorodecanesulfonic acid (PFDS)	0.7154		0.7026	0.6196	0.6069	AveID		0.6369			8.0	50.0			
	0.6191	0.5849													
N-ethyl perfluorooctane	0.9234		0.8278	0.8198	0.8265	AveID		0.8499			4.1	35.0			
sulfonamidoacetic acid (NEtFOSAA)	0.8571	0.8434													
Perfluoroundecanoic acid (PFUnA)	1.4279		1.0939	1.0993	0.9522	L2ID	0.1852	1.0054					0.9940		0.9900
	0.9777	1.0219													

Note: The M1 coefficient is the same as Ave RRF for an Ave curve type.

FORM VI LCMS BY ISOTOPIC DILUTION - INITIAL CALIBRATION DATA CURVE EVALUATION

Lab Name: TestAmerica Sacramento Job No.: 320-29732-1 Analy Batch No.: 175252

SDG No.:

Instrument ID: A8_N GC Column: GeminiC18 3 ID: 3(mm) Heated Purge: (Y/N) N

ANALYTE			RRF			CURVE		COEFFICI	ENT	#	MIN RRF	%RSD	# MAX		# MIN R^2
	LVL 1	LVL 2	LVL 3	LVL 4	LVL 5	TYPE	В	M1	М2				%RS	D OR COD	OR COD
	LVL 6	LVL 7													
MeFOSA	0.9241	0.8075	0.9412	0.9037	0.8958	AveID		0.8961				4.7	35	.0	
	0.9052	0.8952													
Perfluorododecanoic acid (PFDoA)	0.9526	0.9700	0.9547	0.9186	0.9920	AveID		0.9442				3.5	35	.0	
	0.9241	0.8975													
N-EtFOSA-M	0.9404	0.9229	0.9545	0.9058	0.9131	AveID		0.9273				1.8	35	.0	
	0.9341	0.9204													
Perfluorotridecanoic Acid (PFTriA)	0.8626	0.8641	0.8594	0.8657	0.8882	AveID		0.8512				3.5	50	.0	
	0.8079	0.8105													
Perfluorotetradecanoic acid (PFTeA)	2.3446	2.1101	2.1737	1.7703	1.9416	AveID		1.9468				14.1	50	.0	
	1.6352	1.6519													
Perfluoro-n-hexadecanoic acid (PFHxDA)	+++++	1.4914	0.9572	0.9244	0.8465	L2ID	0.6384	0.8505						0.9990	0.9900
	0.8388	0.8647													
Perfluoro-n-octadecanoic acid (PFODA)	0.9507	0.8622	0.8506	0.8241	0.9180	AveID		0.8788				4.9	50	.0	
	0.8809	0.8650													

Note: The M1 coefficient is the same as Ave RRF for an Ave curve type.

LCMS BY EXTERNAL STANDARD - INITIAL CALIBRATION DATA RESPONSE AND CONCENTRATION

Lab Name: TestAmerica Sacramento Job No.: 320-29732-1 Analy Batch No.: 175252

SDG No.:

Instrument ID: A8_N GC Column: GeminiC18 3 ID: 3 (mm) Heated Purge: (Y/N) N

Calibration Start Date: 07/20/2017 17:15 Calibration End Date: 07/20/2017 18:04 Calibration ID: 32643

Calibration Files:

LEVEL:	LAB SAMPLE ID:	LAB FILE ID:
Level 1	IC 320-175252/3	2017.07.20ICAL 003.d
Level 2	IC 320-175252/4	2017.07.20ICAL 004.d
Level 3	IC 320-175252/5	2017.07.20ICAL 005.d
Level 4	IC 320-175252/6	2017.07.20ICAL 006.d
Level 5	IC 320-175252/7	2017.07.20ICAL 007.d
Level 6	IC 320-175252/8	2017.07.20ICAL 008.d
Level 7	IC 320-175252/9	2017.07.20ICAL 009.d

ANALYTE	CURVE			RESPONSE				CONCEN	NTRATION (N	IG/ML)	
	TYPE	LVL 1 LVL 6	LVL 2 LVL 7	LVL 3	LVL 4	LVL 5	LVL 1 LVL 6	LVL 2 LVL 7	LVL 3	LVL 4	LVL 5
13C4 PFBA	Ave	9200596 8377231	9436219 7833395	9579895	9286597	9277585	50.0 50.0	50.0 50.0	50.0	50.0	50.0
13C5 PFPeA	Ave	6139729 5499850	6529085 5042456	6333208	6079990	6226392	50.0 50.0	50.0 50.0	50.0	50.0	50.0
13C2 PFHxA	Ave	5741173 5137101	5838100 4842529	5844106	5716524	5521641	50.0 50.0	50.0 50.0	50.0	50.0	50.0
13C4-PFHpA	Ave	4770470 4705801	5129374 4136580	5087476	5061975	5168717	50.0 50.0	50.0 50.0	50.0	50.0	50.0
1802 PFHxS	Ave	7524410 7413535	7897552 7022783	7689311	7629615	7913061	47.3 47.3	47.3 47.3	47.3	47.3	47.3
M2-6:2FTS	Ave	2437617 2442868	2520393 2513479	2611787	2434393	2522848	47.5 47.5	47.5 47.5	47.5	47.5	47.5
13C4 PFOA	Ave	4679652 3807339	4727178 3595203	4806165	4635535	4478029	50.0 50.0	50.0 50.0	50.0	50.0	50.0
13C4 PFOS	Ave	5675527 5391084	5903714 5397776	5618820	5757051	5751748	47.8 47.8	47.8 47.8	47.8	47.8	47.8
13C5 PFNA	Ave	3609220 3251409	3689841 2923565	3680912	3573960	3519863	50.0 50.0	50.0 50.0	50.0	50.0	50.0
13C8 FOSA	Ave	10390454 9178999	9933579 8597334	10514072	10250601	9837940	50.0 50.0	50.0 50.0	50.0	50.0	50.0
M2-8:2FTS	Ave	1940171 1738290	1988005 1691570	2008772	1954799	1838838	47.9 47.9	47.9 47.9	47.9	47.9	47.9
13C2 PFDA	Ave	3203793 2711585	3264948 2465695	3301213	3083355	3148440	50.0 50.0	50.0 50.0	50.0	50.0	50.0
d3-NMeFOSAA	Ave	1091995 1029158	1077600 1050235	1159944	1124094	1150361	50.0 50.0	50.0 50.0	50.0	50.0	50.0
d5-NEtFOSAA	Ave	1181920 1060235	1187339 1067375	1241427	1185817	1122693	50.0 50.0	50.0 50.0	50.0	50.0	50.0
13C2 PFUnA	Ave	2174103 1916521	2319108 1734594	2352011	1984157	2216403	50.0 50.0	50.0 50.0	50.0	50.0	50.0

LCMS BY EXTERNAL STANDARD - INITIAL CALIBRATION DATA RESPONSE AND CONCENTRATION

Lab Name: TestAmerica Sacramento

SDG No.:

Instrument ID: A8_N

GC Column: GeminiC18 3 ID: 3 (mm)

Calibration Start Date: 07/20/2017 17:15

Calibration End Date: 07/20/2017 18:04

Calibration ID: 32643

ANALYTE	CURVE			RESPONSE			CONCENTRATION (NG/ML)					
	TYPE	LVL 1 LVL 6	LVL 2 LVL 7	LVL 3	LVL 4	LVL 5	LVL 1 LVL 6	LVL 2 LVL 7	LVL 3	LVL 4	LVL 5	
d-N-MeFOSA-M	Ave	2554150 2494419	2392214 2566577	2596651	2484961	2561337	50.0 50.0	50.0 50.0	50.0	50.0	50.0	
13C2 PFDoA	Ave	2499919 2101530	2099102	2328581	2208104	2010091	50.0 50.0	50.0	50.0	50.0	50.0	
d-N-EtFOSA-M	Ave	2571603 2558136	2419802 2546633	2607670	2558301	2557205	50.0 50.0	50.0 50.0	50.0	50.0	50.0	
13C2-PFTeDA	Ave	4440061 3865134	4247031 3577415	4311299	4030828	3992527	50.0 50.0	50.0	50.0	50.0	50.0	
13C2-PFHxDA	Ave	2370411 2069286	2097197 1868909	2213998	2179702	2070713	50.0 50.0	50.0 50.0	50.0	50.0	50.0	

Curve Type Legend:

Ave = Average

LCMS BY ISOTOPIC DILUTION - INITIAL CALIBRATION DATA RESPONSE AND CONCENTRATION

Lab Name: TestAmerica Sacramento Job No.: 320-29732-1 Analy Batch No.: 175252

SDG No.:

Instrument ID: A8_N GC Column: GeminiC18 3 ID: 3 (mm) Heated Purge: (Y/N) N

Calibration Start Date: 07/20/2017 17:15 Calibration End Date: 07/20/2017 18:04 Calibration ID: 32643

Calibration Files:

LEVEL:	LAB SAMPLE ID:	LAB FILE ID:
Level 1	IC 320-175252/3	2017.07.20ICAL 003.d
Level 2	IC 320-175252/4	2017.07.20ICAL 004.d
Level 3	IC 320-175252/5	2017.07.20ICAL 005.d
Level 4	IC 320-175252/6	2017.07.20ICAL 006.d
Level 5	IC 320-175252/7	2017.07.20ICAL 007.d
Level 6	IC 320-175252/8	2017.07.20ICAL 008.d
Level 7	IC 320-175252/9	2017.07.20ICAL 009.d

ANALYTE		RVE			RESPONSE				CONCEN	NTRATION (N	G/ML)	
	REF T	PE LVL LVL		LVL 2 LVL 7	LVL 3	LVL 4	LVL 5	LVL 1 LVL 6	LVL 2 LVL 7	LVL 3	LVL 4	LVL 5
Perfluorobutanoic acid (PFBA)	Av	93 1433	3383 5268	184401 23214875	925332	3426995	8328503	0.500 100	1.00 200	5.00	20.0	50.0
Perfluoropentanoic acid (PFPeA)	Av	EID 6	6748 6890	121725 17723967	668298	2589050	6165403	0.500 100	1.00 200	5.00	20.0	50.0
Perfluorobutanesulfonic acid (PFBS)	Av	2ID 11:	9198 9760	207251 28727203	1154707	4293133	10077823	0.442 88.4	0.884 177	4.42	17.7	44.2
4:2 FTS	Av		6691 1810	48470 8272054	241314	1008354	2413036	0.467 93.4	0.934 187	4.67	18.7	46.7
Perfluorohexanoic acid (PFHxA)	Av		2085 4644	107198 17019818	531793	2139637	5173116	0.500 100	1.00 200	5.00	20.0	50.0
Perfluoroheptanoic acid (PFHpA)	Av		2213 4552	103969 15737233	507848	2097220	5052067	0.500 100	1.00 200	5.00	20.0	50.0
Perfluorohexanesulfonic acid (PFHxS)	Av	PID +-	++++ 1648	168436 26096061	783004	3044035	7368752	+++++ 91.0	0.910 182	4.55	18.2	45.5
6:2FTS	Av		4221 2933	42671 7544242	225835	874570	2110170	0.474 94.8	0.948 190	4.74	19.0	47.4
Perfluorooctanoic acid (PFOA)	Av	_	3024 5273	96571 14387974	500571	1918515	4563458	0.500 100	1.00 200	5.00	20.0	50.0
Perfluoroheptanesulfonic Acid (PFHpS)	Av	2ID 69 1263	9832 6679	128302 21882659	706250	2842525	6830714	0.476 95.2	0.952 190	4.76	19.0	47.6
Perfluorooctanesulfonic acid (PFOS)	Av	EID 60 11092	0576 2240	115323 21396229	589410	2262384	5355867	0.464 92.8	0.928 186	4.64	18.6	46.4
Perfluorononanoic acid (PFNA)	Av		8878 1679	70352 11221107	383423	1448390	3449039	0.500 100	1.00 200	5.00	20.0	50.0
Perfluorooctane Sulfonamide (FOSA)	Av	2ID 10:	9454 9802	185849 27533112	994657	3778234	9167796	0.500 100	1.00 200	5.00	20.0	50.0
8:2FTS	Av		0909 5139	37263 5746246	192486	694740	1614685	0.479 95.8	0.958 192	4.79	19.2	47.9
Perfluorodecanoic acid (PFDA)	Av		1875 0519	58871 9286312	312593	1189794	2780389	0.500 100	1.00 200	5.00	20.0	50.0

FORM VI LCMS BY ISOTOPIC DILUTION - INITIAL CALIBRATION DATA RESPONSE AND CONCENTRATION

Lab Name: TestAmerica Sacramento Job No.: 320-29732-1 Analy Batch No.: 175252

SDG No.:

Instrument ID: A8_N GC Column: GeminiC18 3 ID: 3 (mm) Heated Purge: (Y/N) N

ANALYTE	IS	CURVE			RESPONSE				CONCEN	NTRATION (N	IG/ML)	
	REF	TYPE	LVL 1 LVL 6	LVL 2 LVL 7	LVL 3	LVL 4	LVL 5	LVL 1 LVL 6	LVL 2 LVL 7	LVL 3	LVL 4	LVL 5
N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA)		AveID	10467 1961461	17484 3976390	103070	406426	1028023	0.500	1.00	5.00	20.0	50.0
Perfluorodecanesulfonic acid (PFDS)		AveID	40940	72566 12733574	398109	1438851	3520028	0.482 96.4	0.964	4.82	19.3	48.2
N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)		AveID	10914 1817407	20217 3601071	102763	388851	927893	0.500 100	1.00 200	5.00	20.0	50.0
Perfluoroundecanoic acid (PFUnA)		L2ID	31045 3747668	49779 7090167	257295	872446	2110542	0.500 100	1.00 200	5.00	20.0	50.0
MeFOSA		AveID	23604 4515811	38635 9190215	244390	898240	2294511	0.500 100	1.00 200	5.00	20.0	50.0
Perfluorododecanoic acid (PFDoA)		AveID	23814 3884028	40721 7176939	222314	811349	1994038	0.500 100	1.00 200	5.00	20.0	50.0
N-EtFOSA-M		AveID	24183 4779335	44664 9376063	248915	926942	2334866	0.500 100	1.00 200	5.00	20.0	50.0
Perfluorotridecanoic Acid (PFTriA)		AveID	21565 3395607	36276 6481083	200109	764621	1785380	0.500 100	1.00 200	5.00	20.0	50.0
Perfluorotetradecanoic acid (PFTeA)		AveID	58614 6873007	88585 13208906	506153	1563632	3902732	0.500 100	1.00 200	5.00	20.0	50.0
Perfluoro-n-hexadecanoic acid (PFHxDA)		L2ID	+++++ 3525628	62612 6914779	222901	816435	1701571	+++++ 100	1.00 200	5.00	20.0	50.0
Perfluoro-n-octadecanoic acid (PFODA)		AveID	23766 3702487	36195 6917166	198059	727856	1845337	0.500 100	1.00 200	5.00	20.0	50.0

Curve Type Legend:

AveID = Average isotope dilution

L2ID = Linear 1/conc^2 IsoDil

Report Date: 21-Jul-2017 11:40:12 Chrom Revision: 2.2 26-Jun-2017 08:09:44

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170720-45703.b\2017.07.20ICAL_003.d

Lims ID: IC L1 Full

Client ID:

Sample Type: IC Calib Level: 1

Inject. Date: 20-Jul-2017 17:15:53 ALS Bottle#: 28 Worklist Smp#: 3

Injection Vol: 2.0 ul Dil. Factor: 1.0000

Sample Info: L1-FULL

Misc. Info.: Plate: 1 Rack: 1

Operator ID: SACINSTLCMS01 Instrument ID: A8_N

Sublist: chrom-A8_N*sub19

Method: \ChromNa\Sacramento\ChromData\A8_N\20170720-45703.b\A8_N.m

Limit Group: LC PFC_DOD ICAL

Last Update: 21-Jul-2017 11:40:12 Calib Date: 20-Jul-2017 18:04:17

Integrator: Picker

Quant Method: Isotopic Dilution Quant By: Initial Calibration

Last ICal File: \ChromNA\Sacramento\ChromData\A8_N\20170720-45703.b\2017.07.20ICAL_010.d

Column 1: Det: EXP1

Process Host: XAWRK007

First Level Reviewer: phomsophat Date: 20-Jul-2017 18:20:26

First Level Revie	wei. pric	лизорна	ι		Date.	20-301-2017 16.20.20				
Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 113C4 PFBA	1									
217.00 > 172.00	1.556	1.545	0.011		9200596	51.1		102	28721	
2 Perfluorobuty	•									
212.90 > 169.00		1.549	0.007	1.000	93383	0.5573		111	48.0	
D 3 13C5-PFPe 267.90 > 223.00		1.752	0.005		6139729	51.3		103	44001	
4 Perfluoropen			0.005		0139729	51.5		103	44001	
262.90 > 219.00		1.753	0.013	1.000	66748	0.5449		109	39.5	
D 47 13C3-PFB	S									
301.90 > 83.00	1.784	1.777	0.007		155868	NC			7243	
5 Perfluorobuta										
298.90 > 80.00 298.90 > 99.00	1.784 1.784	1.779 1.779	0.005 0.005	1.000 1.000	119198 50257	0.5271	2.37(0.00-0.00)	119 119	112 97.6	
61 Sodium 1H,					30237		2.37(0.00-0.00)	117	97.0	
327.00 > 307.00		1.985	0.013	1.000	26691	0.5362		115	1324	
D 7 13C2 PFHx	Α									
315.00 > 270.00	2.032	2.024	0.008		5741173	52.0		104	27348	
6 Perfluorohex										
313.00 > 269.00		2.024	0.008	1.000	62085	0.5768		115	155	
D 9 13C4-PFHp 367.00 > 322.00		2.354	0.016		4770470	49.0		98.0	29904	
10 Perfluorohe			0.010		4770470	47.0		70.0	27704	
363.00 > 319.00	•	2.355	0.015	1.000	52213	0.5423		108	163	
D 11 18O2 PFH:	xS									
403.00 > 84.00	2.378	2.369	0.009		7524410	46.9		99.2	34308	
8 Perfluorohex										
399.00 > 80.00	2.378	2.369	0.009	1.000	97933	0.6017		132	148	
					Dogg FOC of 4	404				

Report Date: 21-Jul-2017 11:40:12 Chrom Revision: 2.2 26-Jun-2017 08:09:44 Data File: EXP DLT REL Amount

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 12 M2-6:2FTS										
429.00 > 409.00		2.684	0.016		2437617	46.4		97.6	26142	
13 Sodium 1H, 427.00 > 407.00		H-perfluct 2.684	orooctan 0.016	e 1.000	24221	0.5500		116	644	
° 62 13C2-PFOA		2.004	0.010	1.000	27221	0.0000		110	044	
415.00 > 370.00		2.703	0.018		4597399	50.0			39476	
O 14 13C4 PFO 417.00 > 372.00		2.706	0.015		4679652	53.3		107	33775	
15 Perfluorooct										
413.00 > 369.00 413.00 > 169.00		2.710 2.710	0.011 0.011	1.000 1.000	53024 33457	0.5415	1.58(0.90-1.10)	108 108	9.1 186	
16 Perfluorohej				1 000	40000	0.5044		105	1000	
449.00 > 80.00		2.716	0.012	1.000	69832	0.5011		105	1898	
D 18 13C4 PFOS 503.00 > 80.00	3.093	3.078	0.015		5675527	48.1		101	32114	
17 Perfluorooct 499.00 > 80.00				1.000	40574	0.4934		104	701	M
499.00 > 80.00 499.00 > 99.00		3.080 3.080	0.013 0.013	1.000	60576 12535	0.4934	4.83(0.90-1.10)	106 106	97.4	M
D 19 13C5 PFN/ 468.00 > 423.00		3.080	0.013		3609220	52.1		104	22234	
20 Perfluoronoi 463.00 > 419.00		cid 3.081	0.012	1.000	38878	0.5386		108	93.5	
D 21 13C8 FOS 506.00 > 78.00	3.431	3.422	0.009		10390454	52.9		106	25590	
22 Perfluorooct 498.00 > 78.00		fonamide 3.422	0.009	1.000	109454	0.5703		114	3261	
D 26 M2-8:2FTS		2.420	0.011		1040171	40.4		100	25052	
529.00 > 509.00		3.428	0.011	20	1940171	49.4		103	25053	
25 Sodium 1H, 527.00 > 507.00	3.439				20909	0.5622		117	1214	
D 23 13C2 PFDA 515.00 > 470.00		3.438	0.009		3203793	52.9		106	13546	
24 Perfluorodeo 513.00 > 469.00		cid 3.438	0.009	1.000	31875	0.5315		106	133	
O 27 d3-NMeFO 573.00 > 419.00		3.592	0.010		1091995	49.7		99.5	7734	
28 N-methyl pe 570.00 > 419.00	rfluoroo	ctane sul		1.003	10467	0.5279		106	188	
29 Perfluorodeo	cane Sul	lfonic aci	d							
599.00 > 80.00		3.748	0.011	1.000	40940	0.5414		112	1529	
O 32 d5-NEtFOS 589.00 > 419.00	3.769	3.757	0.012		1181920	51.4		103	3824	
O 30 13C2 PFUr 565.00 > 520.00		3.766	0.012		2174103	51.8		104	11264	
31 Perfluoround 563.00 > 519.00		acid 3.766	0.012	1.000	31045	0.5259		105	58.7	
33 N-ethyl perfl										
584.00 > 419.00	3.778	3.766	0.012	1.003	Page 597 of 1	104 ^{0.5432}		109	262	

Report Date: 21-Jul-2017 11:40:12 Chrom Revision: 2.2 26-Jun-2017 08:09:44

report Bato. 21 oc	2017 11110112	Omom Rovision 2.2	2 20 3 di 1 20 1 7 00 10 7 1 1 1
Data File:	\\ChromNa\Sacramento\ChromData\.	A8_N\20170720-457	'03.b\2017.07.20ICAL_003.d

Data File.	WOTH	Jiliiva	acramen	to to till otti	Data / 10_111201	10120 4010	3.012017.07.2010/1L	_000.0		
Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 34 d-N-MeFO	SA-M									
515.00 > 169.00		3.910	0.002		2554150	50.6		101	755	
35 MeFOSA										
512.00 > 169.00	3.919	3.916	0.003	1.000	23604	0.5156		103	1256	
D 36 13C2 PFD	οA									
615.00 > 570.00	4.071	4.059	0.012		2499919	57.4		115	5518	
37 Perfluorodo	decanoi	c acid								
613.00 > 569.00	4.071	4.059	0.012	1.000	23814	0.5044		101	23.2	
D 38 d-N-EtFOS										
531.00 > 169.00	4.096	4.095	0.001		2571603	50.5		101	5704	
39 N-ethylperflu										
526.00 > 169.00			0.002	1.000	24183	0.5070		101	865	
41 Perfluorotrio			0.040	1 000	04545	0.50/7		101	0.0	
663.00 > 619.00		4.328	0.012	1.000	21565	0.5067		101	8.0	
D 43 13C2-PFT6		4 5 / /	0.017		4440074	F.4.7		100	10407	
715.00 > 670.00			0.017		4440061	54.6		109	12407	
42 Perfluorotet			0.017	1 000	F0/14	0./022		120	4.0	M
712.50 > 668.90 713.00 > 169.00		4.567 4.567	0.016 0.005	1.000 0.998	58614 7596	0.6022	7.72(0.00-0.00)	120 120	4.9 112	M
D 44 13C2-PFH:		4.507	0.003	0.770	7370		7.72(0.00-0.00)	120	112	
815.00 > 770.00		4 976	0.016		2370411	55.8		112	4140	
45 Perfluorohe			0.010		20,0111	00.0		112	1110	
813.00 > 769.00			0.013	1.000	52506	0.4841		96.8	9.4	
46 Perfluorooct			3.0.3		3233	3 3		,		
913.00 > 869.00			0.019	1.000	23766	0.5409		108	11.4	

QC Flag Legend

Processing Flags

NC - Not Calibrated

Review Flags

M - Manually Integrated

Reagents:

LCPFC_FULL-L1_00005 Amount Added: 1.00 Units: mL

Report Date: 21-Jul-2017 11:40:12 Chrom Revision: 2.2 26-Jun-2017 08:09:44 TestAmerica Sacramento Data File: **Injection Date:** 20-Jul-2017 17:15:53 Instrument ID: A8_N Lims ID: IC L1 Full Client ID: Operator ID: SACINSTLCMS01 ALS Bottle#: 28 Worklist Smp#: 3 Injection Vol: 2.0 ul Dil. Factor: 1.0000 Method: Limit Group: LC PFC_DOD ICAL $A8_N$ D 113C4 PFBA 2 Perfluorobutyric acid D 313C5-PFPeA Exp1:m/z 212.90 > 169.00:Moving5PtAverage_x Exp1:m/z 267.90 > 223.00:Moving5PtAverage_x Exp1:m/z 217.00 > 172.00:Moving5PtAverage_x 042 0036 630 60 60 625 ×30 \times_{35} ≻₂₄-≻₂₈-18 21 10 12 14 1.5 1.9 1.1 1.4 1.7 2.0 0.9 1.2 1.8 2.1 1.0 1.3 1.6 2.5 5 Perfluorobutanesulfonic acid 4 Perfluoropentanoic acid 5 Perfluorobutanesulfonic acid Exp1:m/z 298.90 > 80.00:Moving5PtAverage_x3 Exp1:m/z 262.90 > 219.00:Moving5PtAverage_x Exp1:m/z 298.90 > 99.00:Moving5PtAverage_x3 21 (0001 × × × 26 ×35 ≻₂₈-20 21 14 2.0 2.3 1.7 2.0 1.7 2.0 2.3 1.1 1.4 1.7 1.1 1.4 61 Sodium 1H,1H,2H,2H-perfluorohexable 7 13C2 PFHxA 6 Perfluorohexanoic acid Exp1:m/z 315.00 > 270.00:Moving5PtAverage_x Exp1:m/z 327.00 > 307.00:Moving5PtAverage_x Exp1:m/z 313.00 > 269.00:Moving5PtAverage_x 14 28 (00001 X) 16 0012 100 × 8 <u>24</u> ×20 12 12 1.9 2.5 1.9 2.8 1.7 2.0 ⁄lin 1.6 2.2 1.6 2.2 2.5 1.4 2.3 2.6 1.3 1.3 9 13C4-PFHpA 10 Perfluoroheptanoic acid D 11 1802 PFHxS Exp1:m/z 403.00 > 84.00:Moving5PtAverage_x3 Exp1:m/z 367.00 > 322.00:Moving5PtAverage_x Exp1:m/z 363.00 > 319.00:Moving5PtAverage_> 24 0030 0025 ©20 ×16 12 15 10 0 0 1.8 2.1 2.4 2.7 3.0 1.7 2.0 Page 59\(\text{9}\)rof 1 2.9 1.7 2.0 2.3 2.6 2.9 1.5

3.1 /lin 3.4

3.7

2.3

2.6

2.1

2.7

3.3

3.9

2.5

2.8

2.9

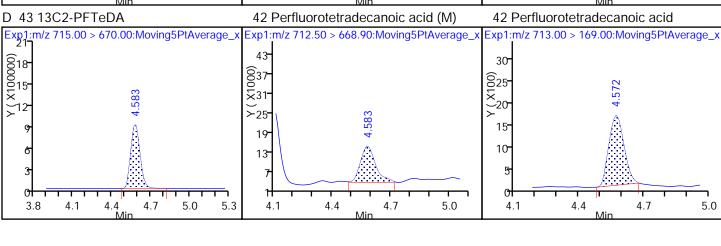
3.2

3.5

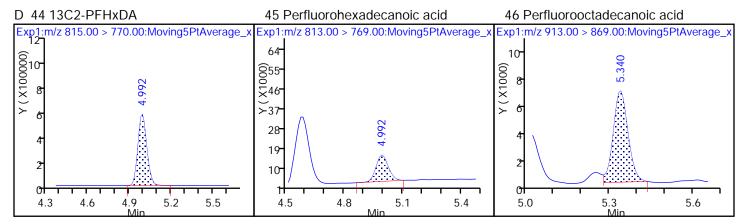
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Chrom Revision: 2.2 26-Jun-2017 08:09:44

Report Date: 21-Jul-2017 11:40:13



Report Date: 21-Jul-2017 11:40:13 Chrom Revision: 2.2 26-Jun-2017 08:09:44 Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170720-45703.b\2017.07.20ICAL_003.d



Report Date: 21-Jul-2017 11:40:13 Chrom Revision: 2.2 26-Jun-2017 08:09:44 Manual Integration/User Assign Peak Report

TestAmerica Sacramento

Data File: \\ChromNa\\Sacramento\\ChromData\\A8_N\\20170720-45703.b\\2017.07.20ICAL_003.d

Injection Date: 20-Jul-2017 17:15:53 Instrument ID: $A8_N$

Lims ID: IC L1 Full

Client ID:

SACINSTLCMS01 ALS Bottle#: Operator ID: 28 Worklist Smp#: 3

Injection Vol: 2.0 ul Dil. Factor: 1.0000

Method: A8_N Limit Group: LC PFC_DOD ICAL

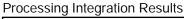
Column: Detector EXP1

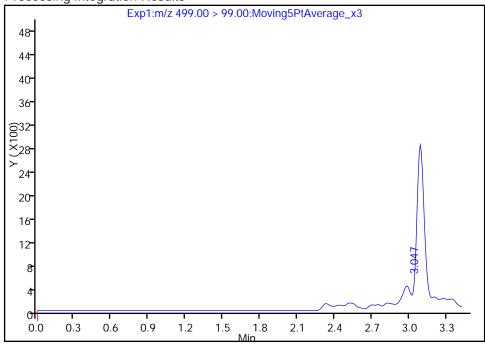
17 Perfluorooctane sulfonic acid, CAS: 1763-23-1

Signal: 2

RT: 3.05 Area: 0

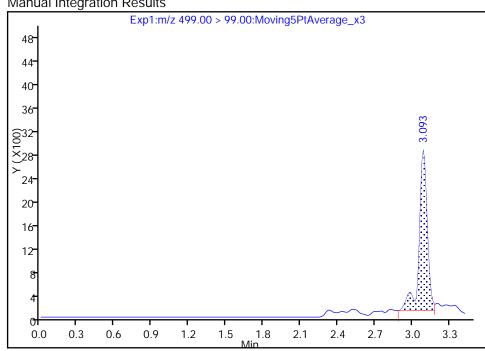
Amount: 0.480344 Amount Units: ng/ml





RT: 3.09 Area: 12535 Amount: 0.493379 Amount Units: ng/ml

Manual Integration Results



Reviewer: phomsophat, 20-Jul-2017 18:19:14

Audit Action: Manually Integrated

Audit Reason: Assign Peak

Page 604 of 1104

Report Date: 21-Jul-2017 11:40:13 Chrom Revision: 2.2 26-Jun-2017 08:09:44 Manual Integration/User Assign Peak Report

TestAmerica Sacramento

Data File: \\ChromNa\\Sacramento\\ChromData\\A8_N\\20170720-45703.b\\2017.07.20ICAL_003.d

Injection Date: 20-Jul-2017 17:15:53 Instrument ID: $A8_N$

Lims ID: IC L1 Full

Client ID:

SACINSTLCMS01 ALS Bottle#: Operator ID: 28 Worklist Smp#: 3

Injection Vol: 2.0 ul Dil. Factor: 1.0000

Method: A8_N Limit Group: LC PFC_DOD ICAL

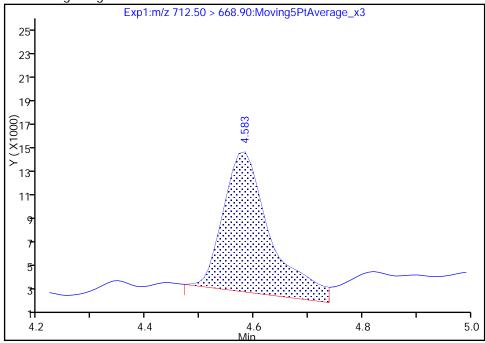
Column: Detector EXP1

42 Perfluorotetradecanoic acid, CAS: 376-06-7

Signal: 1

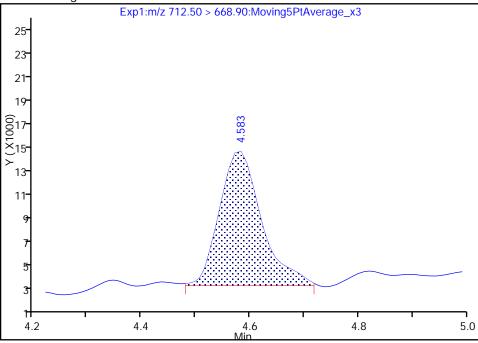
RT: 4.58 Area: 68031 Amount: 0.635272 Amount Units: ng/ml

Processing Integration Results



RT: 4.58 58614 Area: Amount: 0.602188 Amount Units: ng/ml





Reviewer: phomsophat, 20-Jul-2017 18:19:50

Audit Action: Manually Integrated

Audit Reason: Assign Peak

Page 605 of 1104

Report Date: 21-Jul-2017 11:40:16 Chrom Revision: 2.2 26-Jun-2017 08:09:44

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170720-45703.b\2017.07.20ICAL_004.d

Lims ID: IC L2 Full

Client ID:

Sample Type: IC Calib Level: 2

Inject. Date: 20-Jul-2017 17:22:49 ALS Bottle#: 29 Worklist Smp#: 4

Injection Vol: 2.0 ul Dil. Factor: 1.0000

Sample Info: L2-FULL

Misc. Info.: Plate: 1 Rack: 1

Operator ID: SACINSTLCMS01 Instrument ID: A8_N

Sublist: chrom-A8_N*sub19

Method: \ChromNa\Sacramento\ChromData\A8_N\20170720-45703.b\A8_N.m

Limit Group: LC PFC_DOD ICAL

Last Update: 21-Jul-2017 11:40:15 Calib Date: 20-Jul-2017 18:04:17

Integrator: Picker

Quant Method: Isotopic Dilution Quant By: Initial Calibration

Last ICal File: \ChromNA\Sacramento\ChromData\A8_N\20170720-45703.b\2017.07.20ICAL_010.d

Column 1 : Det: EXP1

Process Host: XAWRK007

First Level Reviewer: phomsophat Date: 20-Jul-2017 18:21:47

First Level Revie	wer: pho	msopha	t		Date:	2	<u> 10-Jul-2017 18:21:47</u>			
Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 113C4 PFBA 217.00 > 172.00		1.545	0.001		9436219	52.4		105	33097	
2 Perfluorobut 212.90 > 169.00	yric acid	1.549	-0.003	1.000	184401	1.07		107	92.0	
D 3 13C5-PFPe	eΑ			1.000						
267.90 > 223.00 4 Perfluoroper	ntanoic a		0.003		6529085	54.6		109	56032	
262.90 > 219.00 D 47 13C3-PFB		1.753	0.002	1.000	121725	0.9345		93.5	71.2	
301.90 > 83.00 5 Perfluorobut		1.777 nic acid	-0.004		158631	NC			7509	
298.90 > 80.00	1.782 1.782	1.779 1.779	0.003 0.003	1.000 1.000	207251 88977	0.8731	2.33(0.00-0.00)	98.8 98.8	157 182	
61 Sodium 1H, 327.00 > 307.00				ne 1.000	48470	0.9417		101	2443	
6 Perfluorohex 313.00 > 269.00		cid 2.024	0.005	1.000	107198	0.9794		97.9	268	
D 7 13C2 PFHx 315.00 > 270.00		2.024	0.005		5838100	52.9		106	30260	
D 9 13C4-PFHp 367.00 > 322.00	Α	2.354	0.001		5129374	52.7		105	29558	
10 Perfluorohe	ptanoic a	acid		1 000						
363.00 > 319.00 8 Perfluorohex	canesulfo			1.000	103969	1.00		100	361	
399.00 > 80.00 D 11 18O2 PFH		2.369	0.002	1.000	168436	0.9859		108	218	
403.00 > 84.00	2.371	2.369	0.002		7897552	49.3		104	33343	

 Report Date: 21-Jul-2017 11:40:16
 Chrom Revision: 2.2 26-Jun-2017 08:09:44

 Data File:
 \\ChromNa\Sacramento\ChromData\A8_N\20170720-45703.b\2017.07.20ICAL_004.d

Data File.	NCITIO	JIIIVa\Sa	cramen		Dala (Ao_IN\20 I	70720-4370	3.0\2017.07.20ICAL	_004.0		
Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
13 Sodium 1H,	1H 2H 2	H-nerflu	orooctan	Δ						
427.00 > 407.00		2.684	0.001	1.000	42671	0.9371		98.8	1305	
D 12 M2-6:2FTS	5									
429.00 > 409.00	2.685	2.684	0.001		2520393	47.9		101	22706	
* 62 13C2-PFO	A									
415.00 > 370.00	2.707	2.703	0.004		4702447	50.0			28490	
D 14 13C4 PFO	A									
417.00 > 372.00	2.707	2.706	0.001		4727178	53.8		108	37012	
15 Perfluorooc										
413.00 > 369.00		2.710	-0.003	1.000	96571	0.9763		97.6	16.6	
413.00 > 169.00		2.710		1.000	65507		1.47(0.90-1.10)	97.6	430	
16 Perfluorohe										
449.00 > 80.00		2.716	-0.002	1.000	128302	0.8851		93.0	3866	
D 18 13C4 PFO										
503.00 > 80.00		3.078	-0.002		5903714	50.0		105	28334	
D 19 13C5 PFN										
468.00 > 423.00		3.080			3689841	53.3		107	24283	
17 Perfluorooc										
499.00 > 80.00			-0.004	1.000	115323	0.9030	4.05(0.00.4.40)	97.3	1474	
499.00 > 99.00		3.080	-0.004	1.000	26516		4.35(0.90-1.10)	97.3	249	
20 Perfluorono			0.000	1 000	70252	0.0500		05.0	1/0	
463.00 > 419.00		3.081	0.003	1.000	70352	0.9533		95.3	169	
22 Perfluorooc				1 000	105040	1.01		101	4447	
498.00 > 78.00		3.422	-0.002	1.000	185849	1.01		101	4416	
D 21 13C8 FOS		0.400	0.000		0000570	FO /		101	17000	
506.00 > 78.00			-0.002		9933579	50.6		101	17833	
25 Sodium 1H,		•			070/0	0.0770		400	4744	
527.00 > 507.00		3.428	0.001	1.000	37263	0.9778		102	1714	
D 26 M2-8:2FTS		0.400	0.004		1000005	F0.7		407	04070	
529.00 > 509.00		3.428	0.001		1988005	50.7		106	21079	
24 Perfluorode										
513.00 > 469.00		3.438	-0.001	1.000	58871	0.9633		96.3	270	
D 23 13C2 PFD		0.400	0.004		00/10/0	5.4.0		400	10570	
515.00 > 470.00		3.438	-0.001		3264948	54.0		108	12570	
D 27 d3-NMeFC		0.500			1077/00	40.4		00.0	705/	
573.00 > 419.00		3.592			1077600	49.1		98.2	7956	
28 N-methyl pe				1 000	17101	0.0005		00.4	0.40	
570.00 > 419.00		3.600		1.003	17484	0.8935		89.4	248	
29 Perfluorode										
599.00 > 80.00	3.747	3.748	-0.001	1.000	72566	0.9226		95.7	2655	
D 32 d5-NEtFOS										
589.00 > 419.00	3.756	3.757	-0.001		1187339	51.6		103	2886	
33 N-ethyl perf										
584.00 > 419.00	3.766	3.766	0.0	1.003	20217	1.00		100	465	
31 Perfluoroun										
563.00 > 519.00	3.766	3.766	0.0	1.000	49779	0.8832		88.3	95.5	
D 30 13C2 PFU										
565.00 > 520.00	3.766	3.766	0.0		Page 607 of 1	104 ^{55.2}		110	10841	
					-					

Report Date: 21-Jul-2017 11:40:16 Chrom Revision: 2.2 26-Jun-2017 08:09:44 \\Chrom\\a\Sacramento\\Chrom\Data\A8 \\\20170720-45703 \b\2017 07 20ICAL 004 d

Data File:	ata File: \\ChromNa\Sacramento\ChromData\A8_N\20170720-45703.b\2017.07.20ICAL_004.d									
Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 34 d-N-MeFOSA-M										
515.00 > 169.00		3.910	-0.001		2392214	47.4		94.9	673	
35 MeFOSA	0.707	0.7.0	0.00.		20722			,	0.0	
512.00 > 169.00	3 909	3 916	-0.007	1.000	38635	0.9011		90.1	1727	
37 Perfluorodo			0.007	1.000	00000	0.7011		70.1	.,_,	
613.00 > 569.00		4.059	0.005	1.000	40721	1.03		103	43.7	
D 36 13C2 PFD		1.007	0.000	1.000	10721	1.00		100	10.7	
615.00 > 570.00		4.059	0.005		2099102	48.2		96.4	5171	
D 38 d-N-EtFOS		1.007	0.000		2077102	10.2		70.1	0171	
531.00 > 169.00		4 095	-0.004		2419802	47.5		95.1	5714	
39 N-ethylperfluoro-1-octanesulfonami										
526.00 > 169.00				1.000	44664	1.00		99.5	1582	
41 Perfluorotrio			0.001	1.000	11001	1.00		77.0	1002	
663.00 > 619.00			-0.001	1.000	36276	1.02		102	13.2	
D 43 13C2-PFT		1.020	0.001	1.000	00270	1.02		102	10.2	
715.00 > 670.00		4.566	0.002		4247031	52.2		104	11797	
42 Perfluorotet			0.002		12 17 00 1	02.2		101	11777	
712.50 > 668.90		4.567	0.001	1.000	88585	1.08		108	9.0	
713.00 > 169.00		4.567	-0.010	0.998	11346	1.00	7.81(0.00-0.00)	108	183	
D 44 13C2-PFH										
815.00 > 770.00		4.976	0.002		2097197	49.4		98.7	3883	
45 Perfluorohe						70.7				
813.00 > 769.00				1.000	62612	1.00		100	10.6	
46 Perfluorooctadecanoic a			0.001	1.000	02012	1.00		.00	. 0.0	
913.00 > 869.00		5.321	0.0	1.000	36195	0.9811		98.1	18.5	
710.00 / 007.00	0.021	0.021	5.0	1.000	30173	0.7011		70.1	10.0	

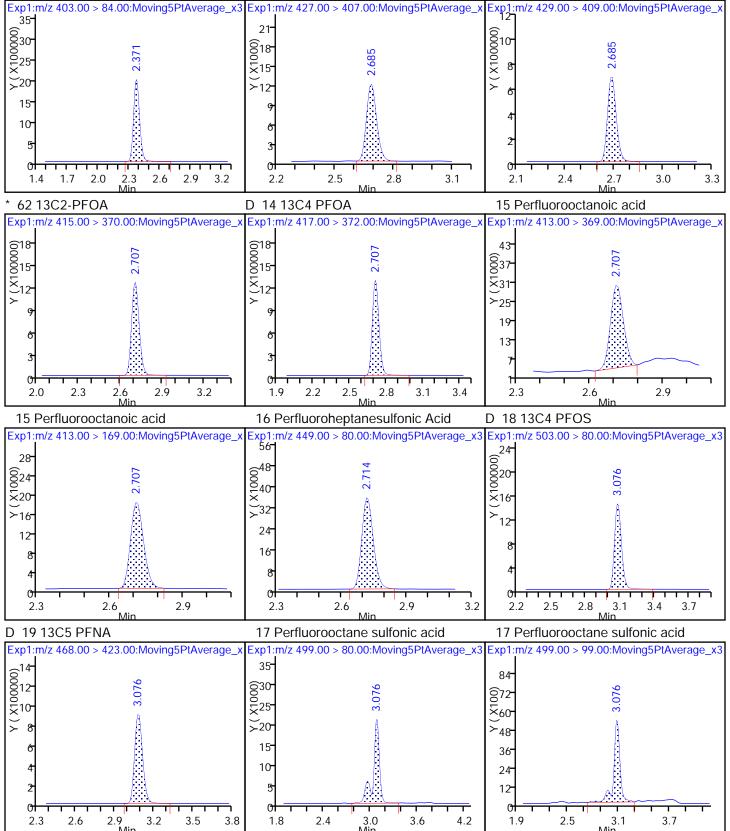
OC Flag Legend Processing Flags

NC - Not Calibrated

Reagents:

LCPFC_FULL-L2_00006 Amount Added: 1.00 Units: mL

Report Date: 21-Jul-2017 11:40:16 Chrom Revision: 2.2 26-Jun-2017 08:09:44 TestAmerica Sacramento Data File: **Injection Date:** 20-Jul-2017 17:22:49 Instrument ID: A8_N Lims ID: IC L2 Full Client ID: Operator ID: SACINSTLCMS01 ALS Bottle#: 29 Worklist Smp#: Injection Vol: 2.0 ul Dil. Factor: 1.0000 Method: Limit Group: LC PFC_DOD ICAL $A8_N$ D 113C4 PFBA 2 Perfluorobutyric acid D 313C5-PFPeA Exp1:m/z 217.00 > 172.00:Moving5PtAverage_x Exp1:m/z 212.90 > 169.00:Moving5PtAverage_x Exp1:m/z 267.90 > 223.00:Moving5PtAverage_x 042 036 030 025 84 ∑30 ×60 ≻₄₈-15 18 36 10 24 12 12 1.0 1.9 1.1 1.4 1.7 2.0 1.3 1.6 1.2 1.5 1.8 5 Perfluorobutanesulfonic acid 5 Perfluorobutanesulfonic acid 4 Perfluoropentanoic acid Exp1:m/z 298.90 > 80.00:Moving5PtAverage_x3 Exp1:m/z 262.90 > 219.00:Moving5PtAverage_x Exp1:m/z 298.90 > 99.00:Moving5PtAverage_x3 71-42 Y (X10000) 061 X51 6 36 ×30 -41 31 18 21 12 11 1.9 2.2 1.6 1.5 1.8 2.4 1.8 2.1 1.2 1.5 2.1 2.4 61 Sodium 1H,1H,2H,2H-perfluorohexan& Perfluorohexanoic acid 7 13C2 PFHxA Exp1:m/z 315.00 > 270.00:Moving5PtAverage_x 281 24 49 0024 00020 × 0642 ×35− <u>20</u> ∑₁₆ 16 >28 21 14 2.0 1.7 2.0 2.3 1.5 1.8 2.1 1.4 1.7 2.3 2.6 2.6 2.4 2.7 1.4 8 Perfluorohexanesulfonic acid 9 13C4-PFHpA 10 Perfluoroheptanoic acid Exp1:m/z 367.00 > 322.00:Moving5PtAverage_x Exp1:m/z 363.00 > 319.00:Moving5PtAverage_x Exp1:m/z 399.00 > 80.00:Moving5PtAverage_x3 49 63 (000018⁻ 642 ×35 (054 1000 1545 1545 ∑₁₅ _28− _36 21 27 18 14 0 0 1.9 Page 609nof 1104 2.9 1.9 2.2 2.5 2.8 2.0 2.3 2.6 1.6 1.7 1.6



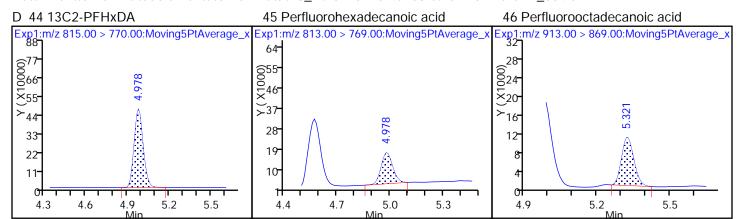
Chrom Revision: 2.2 26-Jun-2017 08:09:44

Report Date: 21-Jul-2017 11:40:16

Chrom Revision: 2.2 26-Jun-2017 08:09:44

Report Date: 21-Jul-2017 11:40:16

Report Date: 21-Jul-2017 11:40:16 Chrom Revision: 2.2 26-Jun-2017 08:09:44 Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170720-45703.b\2017.07.20ICAL_004.d



Report Date: 21-Jul-2017 11:40:19 Chrom Revision: 2.2 26-Jun-2017 08:09:44

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170720-45703.b\2017.07.20ICAL_005.d

Lims ID: IC L3 Full

Client ID:

Sample Type: IC Calib Level: 3

Inject. Date: 20-Jul-2017 17:29:45 ALS Bottle#: 30 Worklist Smp#: 5

Injection Vol: 2.0 ul Dil. Factor: 1.0000

Sample Info: L3-FULL

Misc. Info.: Plate: 1 Rack: 1

Operator ID: SACINSTLCMS01 Instrument ID: A8_N

Sublist: chrom-A8_N*sub19

Method: \ChromNa\Sacramento\ChromData\A8_N\20170720-45703.b\A8_N.m

Limit Group: LC PFC_DOD ICAL

Last Update: 21-Jul-2017 11:40:18 Calib Date: 20-Jul-2017 18:04:17

Integrator: Picker

Quant Method: Isotopic Dilution Quant By: Initial Calibration

Last ICal File: \ChromNA\Sacramento\ChromData\A8_N\20170720-45703.b\2017.07.20ICAL_010.d

Column 1: Det: EXP1

Process Host: XAWRK007

First Level Reviewer: phomsophat Date: 20-Jul-2017 18:23:46

First Level Revie	wei. pric	лизорна	11		Date.		20-Jul-2017 16.23.40	<u> </u>		
Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 113C4 PFBA	١									
217.00 > 172.00	1.545	1.545	0.0		9579895	53.2		106	29940	
2 Perfluorobut	-									
212.90 > 169.00		1.549	0.005	1.000	925332	5.30		106	478	
D 3 13C5-PFP6		4.750	0.044		(000000	F0.0		407	E0.407	
267.90 > 223.00		1.752	0.011		6333208	53.0		106	53427	
4 Perfluoroper 262.90 > 219.00		cid 1.753	0.010	1.000	668298	5.29		106	420	
D 47 13C3-PFB		1.755	0.010	1.000	000270	3.27		100	420	
301.90 > 83.00		1.777	0.005		159845	NC			6236	
5 Perfluorobut										
298.90 > 80.00		1.779	0.012	1.000	1154707	5.00		113	795	
298.90 > 99.00	1.782	1.779	0.003	0.995	454929		2.54(0.00-0.00)	113	737	
61 Sodium 1H,		•								
327.00 > 307.00		1.985	0.009	1.000	241314	4.52		96.9	12106	
D 7 13C2 PFHx		0.004	0.004		F04410/	F0.0		10/	20052	
315.00 > 270.00		2.024	0.004		5844106	52.9		106	29053	
6 Perfluorohex 313.00 > 269.00		2.024	0.004	1.000	531793	4.85		97.1	1493	
D 9 13C4-PFH _k		2.024	0.004	1.000	331773	4.03		77.1	1473	
367.00 > 322.00		2.354	0.004		5087476	52.3		105	30047	
10 Perfluorohe										
363.00 > 319.00	•	2.355	0.011	1.000	507848	4.95		98.9	1496	
D 11 18O2 PFH	xS									
403.00 > 84.00	2.374	2.369	0.005		7689311	48.0		101	40831	
8 Perfluorohex										
399.00 > 80.00	2.374	2.369	0.005	1.000	783004	4.71		103	974	
					Dogo 614 of 1	1404				

 Report Date: 21-Jul-2017 11:40:19
 Chrom Revision: 2.2 26-Jun-2017 08:09:44

 Data File:
 \\ChromNa\Sacramento\ChromData\A8_N\20170720-45703.b\2017.07.20ICAL_005.d

Data File.	WCIIIC	JIIIVa\Sa	cramen		Dala/Ao_IN/201	70720-4370	3.0\2017.07.20ICAL	_005.u		
Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 12 M2-6:2FTS	3									
429.00 > 409.00		2.684	0.005		2611787	49.7		105	28229	
13 Sodium 1H,	1H,2H,2	H-perflu	orooctan	ie						
427.00 > 407.00		2.684	0.005	1.000	225835	4.79		101	6695	
* 62 13C2-PFO		2.702	0.000		4/40//0	FO 0			20542	
415.00 > 370.00 D 14 13C4 PFO		2.703	0.008		4640669	50.0			38542	
417.00 > 372.00		2.706	0.012		4806165	54.7		109	40915	
15 Perfluorooc										
413.00 > 369.00	2.718	2.710	0.008	1.000	500571	4.98		99.5	88.7	
413.00 > 169.00	2.718	2.710	0.008	1.000	306435		1.63(0.90-1.10)	99.5	1728	
16 Perfluorohe				1 000	70/050	F 40		400	44075	
449.00 > 80.00		2.716	0.009	1.000	706250	5.12		108	11075	
D 18 13C4 PFO 503.00 > 80.00		3.078	0.012		5618820	47.6		99.6	49850	
17 Perfluorooc					3010020	47.0		77.0	47030	
499.00 > 80.00		3.080	0.010	1.000	589410	4.85		105	4247	
499.00 > 99.00	3.090	3.080	0.010	1.000	123794		4.76(0.90-1.10)	105	1181	
D 19 13C5 PFN	A									
468.00 > 423.00	3.090	3.080	0.010		3680912	53.1		106	25050	
20 Perfluorono			0.000	1 000	000400	F 04		404	050	
463.00 > 419.00		3.081	0.009	1.000	383423	5.21		104	952	
D 21 13C8 FOS. 506.00 > 78.00		3.422	0.006		10514072	53.6		107	19088	
22 Perfluorooc					10011072	00.0		107	17000	
498.00 > 78.00		3.422		1.000	994657	5.12		102	10553	
D 26 M2-8:2FTS	5									
529.00 > 509.00	3.436	3.428	0.008		2008772	51.2		107	25796	
25 Sodium 1H,		-								
527.00 > 507.00		3.428	0.008	1.000	192486	5.00		104	7399	
D 23 13C2 PFD. 515.00 > 470.00		2 420	0.006		2201212	54.6		109	14110	
24 Perfluorode		3.438	0.006		3301213	34.0		109	14113	
513.00 > 469.00		3.438	0.006	1.000	312593	5.06		101	1266	
D 27 d3-NMeFC										
573.00 > 419.00		3.592	0.007		1159944	52.8		106	8334	
28 N-methyl pe	erfluoroo	ctane su	lfonami							
570.00 > 419.00	3.609	3.600	0.009	1.003	103070	4.89		97.9	1537	
29 Perfluorode										
599.00 > 80.00		3.748	0.007	1.000	398109	5.32		110	7375	
D 32 d5-NEtFOS		2 757	0.000		1041407	E4.0		100	2501	
589.00 > 419.00 D 30 13C2 PFU		3.757	0.008		1241427	54.0		108	3591	
565.00 > 520.00		3.766	0.009		2352011	56.0		112	9037	
31 Perfluoroun			,			55.0		· · -		
563.00 > 519.00		3.766	0.009	1.000	257295	5.26		105	539	
33 N-ethyl perf	luoroocta	ane sulfo	namid							
584.00 > 419.00	3.775	3.766	0.009	1.003	Page 615 of 1	104 ^{4.87}		97.4	2086	
					-					

Report Date: 21-Jul-2017 11:40:19 Chrom Revision: 2.2 26-Jun-2017 08:09:44

Data File:	\\Chrc	omNa\Sa	acrament	:o\Chrom	Data\A8_N\201	70720-4570	3.b\2017.07.20ICAL	_005.d		
Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 34 d-N-MeFO	SA-M									
515.00 > 169.00		3.910	0.006		2596651	51.5		103	740	
35 MeFOSA										
512.00 > 169.00	3.923	3.916	0.007	1.000	244390	5.25		105	4321	
D 36 13C2 PFD	οA									
615.00 > 570.00	4.065	4.059	0.006		2328581	53.5		107	5769	
37 Perfluorodo	decanoio	c acid								
613.00 > 569.00	4.065	4.059	0.006	1.000	222314	5.06		101	225	
D 38 d-N-EtFOS										
531.00 > 169.00	4.100	4.095	0.005		2607670	51.2		102	6615	
39 N-ethylperflu										
526.00 > 169.00			0.005	1.000	248915	5.15		103	3829	
41 Perfluorotrio				4 000	000100	- 0-		404	70.7	
663.00 > 619.00		4.328	0.009	1.000	200109	5.05		101	72.7	
D 43 13C2-PFT		45//	0.010		4244200	F2 0		10/	10074	
715.00 > 670.00		4.566	0.012		4311299	53.0		106	12874	
42 Perfluoroteti 712.50 > 668.90			0.011	1 000	E041E2	E EO		110	17 6	
713.00 > 668.90 713.00 > 169.00		4.567 4.567	0.011 0.0	1.000 0.998	506153 58491	5.58	8.65(0.00-0.00)	112 112	47.6 863	
D 44 13C2-PFH		4.507	0.0	0.770	30471		0.03(0.00 0.00)	112	000	
815.00 > 770.00		4.976	0.011		2213998	52.1		104	4365	
45 Perfluorohe			0.011		2210770	02.1		101	1000	
813.00 > 769.00		4.979	0.008	1.000	222901	4.88		97.5	36.5	
46 Perfluorooct										
913.00 > 869.00			0.008	1.000	198059	4.84		96.8	91.8	

OC Flag Legend Processing Flags

NC - Not Calibrated

Reagents:

LCPFC_FULL-L3_00005 Amount Added: 1.00 Units: mL

Report Date: 21-Jul-2017 11:40:19 Chrom Revision: 2.2 26-Jun-2017 08:09:44 TestAmerica Sacramento Data File: **Injection Date:** 20-Jul-2017 17:29:45 Instrument ID: A8_N Lims ID: IC L3 Full Client ID: Operator ID: SACINSTLCMS01 ALS Bottle#: 30 Worklist Smp#: 5 Injection Vol: 2.0 ul Dil. Factor: 1.0000 Limit Group: LC PFC_DOD ICAL Method: $A8_N$ D 113C4 PFBA 2 Perfluorobutyric acid D 3 13C5-PFPeA Exp1:m/z 217.00 > 172.00:Moving5PtAverage_> 000042 X) ©28 ©24 042 000 35 × 28 21 21 12 1.2 1.5 1.2 1.5 1.8 2.1 0.9 1.8 2.1 1.2 1.5 1.8 2.1 5 Perfluorobutanesulfonic acid 5 Perfluorobutanesulfonic acid 4 Perfluoropentanoic acid Exp1:m/z 262.90 > 219.00:Moving5PtAverage_x Exp1:m/z 298.90 > 99.00:Moving5PtAverage_x3 Exp1:m/z 298.90 > 80.00:Moving5PtAverage_x3 35 56 030 25 00048- 00048- 0048-(00015 X <u>~</u>32 15 10 16- 1.5 1.8 2.1 2.0 2.3 1.3 1.2 1.1 1.4 1.0 1.6 1.9 2.2 2.5 61 Sodium 1H,1H,2H,2H-perfluorohexable 7 13C2 PFHxA 6 Perfluorohexanoic acid ____ Exp1:m/z 315.00 > 270.00:Moving5PtAverage_> 281 Exp1:m/z 327.00 > 307.00:Moving5PtAverage_x Exp1:m/z 313.00 > 269.00:Moving5PtAverage_x (00001 X) 16 (21- (21- (218-(218 7 (X10000) 12 2.8 1.5 1.8 2.1 1.5 1.8 2.1 2.7 1.0 1.6 2.2 2.4 2.7 2.4 1.2 1.2 9 13C4-PFHpA 10 Perfluoroheptanoic acid D 11 1802 PFHxS Exp1:m/z 363.00 > 319.00:Moving5PtAverage_> Exp1:m/z 367.00 > 322.00:Moving5PtAverage_x Exp1:m/z 403.00 > 84.00:Moving5PtAverage_x3 21-00018-X15-(21-000018-15-030 025 ×₂₀ 10 0 0 $^{\circ}$ 1.8 2.1 2.4 2.7 3.0 1.7 2.9 1.4 2.0 2.6 3.2 1.5

3.1 /lin 3.7

4.3

2.3

2.6

2.9

3.2

3.5

3.8

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1.6

2.2

2.8

3.4

4.0

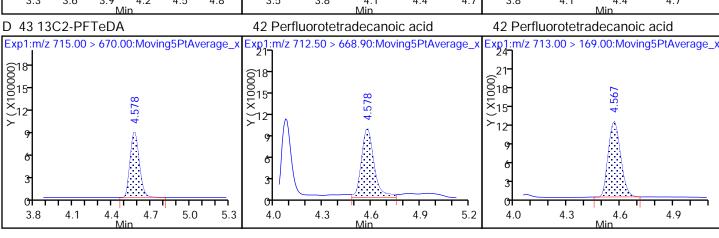
1.9

2.5

Chrom Revision: 2.2 26-Jun-2017 08:09:44

Report Date: 21-Jul-2017 11:40:19

Report Date: 21-Jul-2017 11:40:19 Chrom Revision: 2.2 26-Jun-2017 08:09:44 Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170720-45703.b\2017.07.20ICAL_005.d 31 Perfluoroundecanoic acid 33 N-ethyl perfluorooctane sulfonamid D 34 d-N-MeFOSA-M Exp1:m/z 563.00 > 519.00:Moving5PtAverage_x (X100000) (X100000) (X100000) Y (X10000) ×30-18 12 0 3.8 3.8 3.2 3.5 4.1 4.4 3.2 3.5 4.1 3.2 3.5 3.8 4.1 4.4 35 MeFOSA D 36 13C2 PFDoA 37 Perfluorododecanoic acid Exp1:m/z 512.00 > 169.00:Moving5PtAverage_x Exp1:m/z 615.00 > 570.00:Moving5PtAverage_x Exp1:m/z 613.00 > 569.00:Moving5PtAverage_> V (X10000) √ (X10000) √ 678 878 -65 39 26 13 4.0 4.3 3.9 3.5 3.8 3.7 3.6 4.1 4.4 D 38 d-N-EtFOSA-M 39 N-ethylperfluoro-1-octanesulfonami 41 Perfluorotridecanoic acid Exp1:m/z 531.00 > 169.00:Moving5PtAverage_> Exp1:m/z 526.00 > 169.00:Moving5PtAverage_x Exp1:m/z 663.00 > 619.00:Moving5PtAverage_x (X100000). (X10000) 7. (X10000) <u>6</u>72 ×60 ≻48 36 24 12 0 3.9 4.5 3.8 3.3 3.6 4.2 4.8 3.5 4.1 4.4 4.7 3.8 4.1 4.7 4.4



Report Date: 21-Jul-2017 11:40:19 Chrom Revision: 2.2 26-Jun-2017 08:09:44 Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170720-45703.b\2017.07.20ICAL_005.d

D 44 13C2-PFHxDA 45 Perfluorohexadecanoic acid 46 Perfluorooctadecanoic acid Exp1:m/z 815.00 > 770.00:Moving5PtAverage_x Exp1:m/z 813.00 > 769.00:Moving5PtAverage_x Exp1:m/z 913.00 > 869.00:Moving5PtAverage_x Y (X10000) Y (X100000) 5.329 33 22 11 0 О 0 4.3 4.6 4.9 5.2 5.5 4.5 4.8 5.1 5.4 4.8 5.1 5.4 5.7

Report Date: 21-Jul-2017 11:40:21 Chrom Revision: 2.2 26-Jun-2017 08:09:44

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170720-45703.b\2017.07.20ICAL_006.d

Lims ID: IC L4 Full

Client ID:

Sample Type: IC Calib Level: 4

Inject. Date: 20-Jul-2017 17:36:41 ALS Bottle#: 31 Worklist Smp#: 6

Injection Vol: 2.0 ul Dil. Factor: 1.0000

Sample Info: L4-FULL

Misc. Info.: Plate: 1 Rack: 1

Operator ID: SACINSTLCMS01 Instrument ID: A8_N

Sublist: chrom-A8_N*sub19

Method: \ChromNa\Sacramento\ChromData\A8_N\20170720-45703.b\A8_N.m

Limit Group: LC PFC_DOD ICAL

Last Update: 21-Jul-2017 11:40:21 Calib Date: 20-Jul-2017 18:04:17

Integrator: Picker

Quant Method: Isotopic Dilution Quant By: Initial Calibration

Last ICal File: \ChromNA\Sacramento\ChromData\A8_N\20170720-45703.b\2017.07.20ICAL_010.d

Column 1: Det: EXP1

Process Host: XAWRK007

First Level Reviewer: phomsophat Date: 20-Jul-2017 18:24:10

First Level Revie	wer: pho	msopha	<u>it</u>		Date:	2	<u> 10-Jul-2017 18:24:10</u>	<u> </u>		
Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 113C4 PFBA		4 5 4 5	0.000		000/507	F4 (100	04.440	
217.00 > 172.00		1.545	-0.009		9286597	51.6		103	31449	
2 Perfluorobut 212.90 > 169.00	•	1.549	-0.004	1.000	3426995	20.3		101	1538	
D 3 13C5-PFPe 267.90 > 223.00		1.752	-0.007		6079990	50.8		102	50460	
4 Perfluoroper	ntanoic a	cid								
262.90 > 219.00	1.745	1.753	-0.008	1.000	2589050	21.3		107	1653	
D 47 13C3-PFB										
301.90 > 83.00		1.777	-0.004		156305	NC			9045	
5 Perfluorobut 298.90 > 80.00	anesulto 1.773	nic acid 1.779	-0.006	1.000	4293133	18.7		106	2860	
	1.773	1.779	-0.006	1.000	1665381	10.7	2.58(0.00-0.00)	106	2532	
61 Sodium 1H,	1H,2H,2	H-perflu	orohexar	ne						
327.00 > 307.00	1.971	1.985	-0.014	1.000	1008354	20.3		109	40144	
6 Perfluorohex										
313.00 > 269.00		2.024	-0.007	1.000	2139637	20.0		99.8	5493	
D 7 13C2 PFHx 315.00 > 270.00		2.024	-0.007		5716524	51.8		104	32388	
D 9 13C4-PFH _k		2.024	-0.007		5710524	0.10		104	32300	
367.00 > 322.00		2.354	-0.011		5061975	52.0		104	27219	
10 Perfluorohe	•									
363.00 > 319.00				1.000	2097220	20.5		103	5700	
8 Perfluorohex				4 000	0044005	40.4		404	0.400	
399.00 > 80.00		2.369	-0.010	1.000	3044035	18.4		101	2408	
D 11 18O2 PFH 403.00 > 84.00	xS 2.359	2.369	-0.010		7629615	47.6		101	42166	
100.00 / 0 1.00	2.007	2.007	3.010		7027010	17.0		101	.2.100	

Data File:	\\Chr	omNa\Sa	acrament	:o\Chrom	Data\A8_N\201	70720-4570	3.b\2017.07.20ICAL	_006.d		
Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
13 Sodium 1H,	1 2 2	⊔ norflu	orooctan	0						
427.00 > 407.00	2.676	•		1.000	874570	19.9		105	14507	
D 12 M2-6:2FTS 429.00 > 409.00	2.676	2.684	-0.008		2434393	46.3		97.5	25594	
* 62 13C2-PFOA 415.00 > 370.00		2.703	-0.005		4644126	50.0			38178	
D 14 13C4 PFO. 417.00 > 372.00		2.706	-0.008		4635535	52.8		106	28007	
15 Perfluorooc										
413.00 > 369.00 413.00 > 169.00			-0.005 -0.005	1.000 1.000	1918515 1181148	19.8	1.62(0.90-1.10)	98.9 98.9	305 4961	
16 Perfluorohe	ptanesul	lfonic Ac	id							
449.00 > 80.00 D 18 13C4 PFO		2.716	-0.011	1.000	2842525	20.1		106	30364	
503.00 > 80.00	3.072	3.078	-0.006		5757051	48.8		102	27732	
D 19 13C5 PFN. 468.00 > 423.00	3.072		-0.008		3573960	51.6		103	23232	
17 Perfluorooci				1 000	22/2204	10.0		07.0	7520	
499.00 > 80.00 499.00 > 99.00	3.072	3.080 3.080	-0.008 -0.008	1.000 1.000	2262384 477809	18.2	4.73(0.90-1.10)	97.9 97.9	7529 3903	
20 Perfluorono 463.00 > 419.00			-0.009	1.000	1448390	20.3		101	3289	
22 Perfluorooc	tane Sul	fonamid	е							
498.00 > 78.00 D 21 13C8 FOS		3.422	-0.005	1.000	3778234	20.0		99.8	18882	
506.00 > 78.00	3.417		-0.005		10250601	52.2		104	18304	
25 Sodium 1H, 527.00 > 507.00		•			694740	18.5		96.8	13423	
D 26 M2-8:2FTS 529.00 > 509.00		3.428	-0.002		1954799	49.8		104	22680	
24 Perfluorode 513.00 > 469.00			-0.004	1.000	1189794	20.6		103	4872	
D 23 13C2 PFD. 515.00 > 470.00		3.438			3083355	51.0		102	14587	
D 27 d3-NMeFC	SAA									
573.00 > 419.00 28 N-methyl pe			-0.005 Ilfonami		1124094	51.2		102	7561	
570.00 > 419.00 29 Perfluorode				1.003	406426	19.9		99.6	3154	
599.00 > 80.00	3.743		-0.005	1.000	1438851	18.8		97.3	11319	
D 32 d5-NEtFOS 589.00 > 419.00		3.757	-0.004		1185817	51.6		103	3770	
33 N-ethyl perf 584.00 > 419.00			onamid -0.003	1.003	388851	19.3		96.5	4753	
31 Perfluoroun 563.00 > 519.00			-0.003	1.000	872446	21.7		108	1661	
D 30 13C2 PFU	nA									
565.00 > 520.00	3.763	3.766	-0.003		Page 623 of 1	104 ^{47.3}		94.5	7396	

Chrom Revision: 2.2 26-Jun-2017 08:09:44 Report Date: 21-Jul-2017 11:40:21

- 1									
Data File:	\\ChromNa	a\Sacramento\	ChromData\A8_	_N\2017	0720-457	703.b\201	7.07.	20ICAL ₋	_006.d

Data File.	NCIII	JIIIVa\S	aciamen		iDaiaiH0_INIZU I	10120-4310	3.D\2017.07.20ICAI	006.u		
Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 34 d-N-MeFO	SA-M									
515.00 > 169.00		3.910	-0.003		2484961	49.3		98.6	707	
35 MeFOSA										
512.00 > 169.00	3.915	3.916	-0.001	1.000	898240	20.2		101	6048	
37 Perfluorodo	decanoi	c acid								
613.00 > 569.00	4.055	4.059	-0.004	1.000	811349	19.5		97.3	831	
D 36 13C2 PFD										
615.00 > 570.00		4.059	-0.004		2208104	50.7		101	4564	
D 38 d-N-EtFOS		4.005	0.005		255224	F0.0		100	/ F 0 0	
531.00 > 169.00			-0.005		2558301	50.2		100	6590	
39 N-ethylperflu 526.00 > 169.00				1.000	926942	19.5		97.7	5383	
			-0.004	1.000	920942	19.3		91.1	3363	
41 Perfluorotric 663.00 > 619.00			-0.002	1.000	764621	20.3		102	285	
D 43 13C2-PFT		4.020	0.002	1.000	704021	20.0		102	200	
715.00 > 670.00		4.566	-0.004		4030828	49.6		99.1	14420	
42 Perfluoroteti										
712.50 > 668.90			-0.005	1.000	1563632	18.2		90.9	194	
713.00 > 169.00	4.550	4.567	-0.017	0.998	206190		7.58(0.00-0.00)	90.9	2338	
D 44 13C2-PFH	xDA									
815.00 > 770.00	4.973	4.976	-0.003		2179702	51.3		103	3650	
45 Perfluorohe:										
813.00 > 769.00	4.982	4.979	0.003	1.000	816435	21.0		105	139	
46 Perfluorooct										
913.00 > 869.00	5.326	5.321	0.005	1.000	727856	18.8		93.8	299	
OC Flag Loc	back									

OC Flag Legend Processing Flags

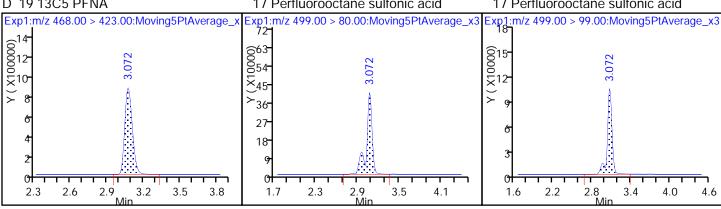
NC - Not Calibrated

Reagents:

LCPFC_FULL-L4_00008 Amount Added: 1.00 Units: mL

Report Date: 21-Jul-2017 11:40:21 Chrom Revision: 2.2 26-Jun-2017 08:09:44 TestAmerica Sacramento Data File: **Injection Date:** 20-Jul-2017 17:36:41 Instrument ID: A8_N Lims ID: IC L4 Full Client ID: Operator ID: SACINSTLCMS01 ALS Bottle#: 31 Worklist Smp#: Injection Vol: 2.0 ul Dil. Factor: 1.0000 Method: Limit Group: LC PFC_DOD ICAL $A8_N$ D 113C4 PFBA 2 Perfluorobutyric acid D 313C5-PFPeA Exp1:m/z 217.00 > 172.00:Moving5PtAverage_x Exp1:m/z 212.90 > 169.00:Moving5PtAverage_x Exp1:m/z 267.90 > 223.00:Moving5PtAverage_x (0000015 X12 042 0036 ©28 ©24 ×30 ≻₂₄-18 12 12 0.9 1.2 1.5 1.2 1.7 2.0 1.8 2.1 1.5 1.8 2.1 5 Perfluorobutanesulfonic acid 5 Perfluorobutanesulfonic acid 4 Perfluoropentanoic acid Exp1:m/z 262.90 > 219.00:Moving5PtAverage_x Exp1:m/z 298.90 > 80.00:Moving5PtAverage_x3 Exp1:m/z 298.90 > 99.00:Moving5PtAverage_x3 21- 00018-15-77 (0000012 X) X 0066 ×55 22 11 1.3 1.9 2.2 2.5 1.4 2.0 2.3 1.9 2.2 1.0 1.1 1.3 1.6 2.5 1.0 61 Sodium 1H,1H,2H,2H-perfluorohexan Perfluorohexanoic acid 7 13C2 PFHxA Exp1:m/z 327.00 > 307.00:Moving5PtAverage_x Exp1:m/z 313.00 > 269.00:Moving5PtAverage_; Exp1:m/z 315.00 > 270.00:Moving5PtAverage_x Y (X100000) 49 ©24 ©20 0042 ×35 ×₁₆-21 14 1.5 2.1 2.7 1.4 1.7 2.0 2.6 1.5 1.8 2.1 0.9 2.3 2.4 2.7 8 Perfluorohexanesulfonic acid 9 13C4-PFHpA 10 Perfluoroheptanoic acid Exp1:m/z 367.00 > 322.00:Moving5PtAverage_x Exp1:m/z 363.00 > 319.00:Moving5PtAverage_x Exp1:m/z 399.00 > 80.00:Moving5PtAverage_x3 21 (12 (0000010 8 (000018 (000015 (000015 (000018) (000018) 84 072 ∑60 ≻48 36 24 12 0 0 1.9 2.2 2.5 2.8 1.5 1.8 2.1 2.4 2.7 3.0 1.6 1.6

Report Date: 21-Jul-2017 11:40:21 Chrom Revision: 2.2 26-Jun-2017 08:09:44 Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170720-45703.b\2017.07.20ICAL_006.d 11 1802 PFHxS 13 Sodium 1H,1H,2H,2H-perfluoroocta De 12 M2-6:2FTS Exp1:m/z 403.00 > 84.00:Moving5PtAverage_x3 Y (X100000) 00001× ×)20 630<u>-</u> ∑25• ≻20 15- 15- 10 10 2.6 2.9 3.2 2.7 1.3 1.9 2.5 3.1 2.0 2.3 2.1 2.4 3.0 3.3 62 13C2-PFOA D 14 13C4 PFOA 15 Perfluorooctanoic acid Exp1:m/z 415.00 > 370.00:Moving5PtAverage_> Exp1:m/z 417.00 > 372.00:Moving5PtAverage_x Exp1:m/z 413.00 > 369.00:Moving5PtAverage_x (0000015 X) 618 600 15 670 660 ×50 ≻₄₀-30 20 10 2.2 2.6 2.5 2.8 2.3 2.9 2.5 2.8 3.1 3.1 3.2 15 Perfluorooctanoic acid 16 Perfluoroheptanesulfonic Acid D 18 13C4 PFOS Exp1:m/z 413.00 > 169.00:Moving5PtAverage_> Exp1:m/z 449.00 > 80.00:Moving5PtAverage_x3 Exp1:m/z 503.00 > 80.00:Moving5PtAverage_x3 24 (000001 ×16 (X100000) (X100000) 8 (0001× ×)28 21 2.7 2.4 2.7 3.0 1.8 2.1 2.4 3.0 3.3 3.6 2.2 2.5 2.8 3.1 3.7 2.1 3.3 3.4 4.0 D 19 13C5 PFNA 17 Perfluorooctane sulfonic acid 17 Perfluorooctane sulfonic acid



Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170720-45703.b\2017.07.20ICAL_006.d 20 Perfluorononanoic acid 22 Perfluorooctane Sulfonamide D 21 13C8 FOSA Exp1:m/z 463.00 > 419.00:Moving5PtAverage_x Exp1:m/z 498.00 > 78.00:Moving5PtAverage_x3 Exp1:m/z 506.00 > 78.00:Moving5PtAverage_x3 (0000012 X) × X 000036 30 30 (00001×)× 32 3.072 24 18 16 12 2.4 2.7 3.0 3.3 3.6 2.5 2.8 3.1 3.4 3.7 4.0 2.9 3.2 3.5 3.8 4.1 2.6 25 Sodium 1H,1H,2H,2H-perfluorodecaDe26 M2-8:2FTS 24 Perfluorodecanoic acid Exp1:m/z 513.00 > 469.00:Moving5PtAverage_> Exp1:m/z 529.00 > 509.00:Moving5PtAverage_x Exp1:m/z 527.00 > 507.00:Moving5PtAverage_x 28 670 660 (042 0001 X 0024 ×20 **≻**16 ≻₄₀-21 30 20 10 3.4 4.0 3.0 3.3 3.9 3.0 3.1 3.7 3.6 3.3 D 23 13C2 PFDA D 27 d3-NMeFOSAA 28 N-methyl perfluorooctane sulfonami Exp1:m/z 570.00 > 419.00:Moving5PtAverage_x Exp1:m/z 515.00 > 470.00:Moving5PtAverage_> Exp1:m/z 573.00 > 419.00:Moving5PtAverage_> (12 (0000010 8 6036 0036 015 0015 12 12 ×30 18 12 2.9 3.2 3.5 3.0 3.3 4.2 3.2 3.5 3.8 2.6 3.8 4.1 3.6 3.9 2.9 4.1 2.7 29 Perfluorodecane Sulfonic acid D 32 d5-NEtFOSAA 33 N-ethyl perfluorooctane sulfonamid Exp1:m/z 599.00 > 80.00:Moving5PtAverage_x3 Exp1:m/z 589.00 > 419.00:Moving5PtAverage_x Exp1:m/z 584.00 > 419.00:Moving5PtAverage_x (56⁻ (00048⁻ (000012 ×) > 9 6⁴² ×40 ×30-≻₂₄-24 18 16 12 0 3.3 3.6 3.9 4.2 2.9 3.2 3.5 3.8 4.1 4.4 3.1 3.4 4.0 4.3 3.0

Chrom Revision: 2.2 26-Jun-2017 08:09:44

Report Date: 21-Jul-2017 11:40:21

Chrom Revision: 2.2 26-Jun-2017 08:09:44

Report Date: 21-Jul-2017 11:40:21

Report Date: 21-Jul-2017 11:40:21 Chrom Revision: 2.2 26-Jun-2017 08:09:44 Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170720-45703.b\2017.07.20ICAL_006.d

45 Perfluorohexadecanoic acid D 44 13C2-PFHxDA 46 Perfluorooctadecanoic acid Exp1:m/z 913.00 > 869.00:Moving5PtAverage_x Exp1:m/z 815.00 > 770.00:Moving5PtAverage_x Exp1:m/z 813.00 > 769.00:Moving5PtAverage_x 35-0030-1×25-Y (X100000) (30° 00025 ×)20° 4.973 **≻**20 15- 15- 10 10 0 0 0 5.0 5.3 4.4 4.7 5.3 5.6 4.2 4.5 4.8 5.1 5.4 5.7 4.7 5.0 5.6 5.9

Report Date: 21-Jul-2017 11:40:25 Chrom Revision: 2.2 26-Jun-2017 08:09:44

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170720-45703.b\2017.07.20ICAL_007.d

Lims ID: IC L5 Full

Client ID:

Sample Type: IC Calib Level: 5

Inject. Date: 20-Jul-2017 17:43:35 ALS Bottle#: 32 Worklist Smp#: 7

Injection Vol: 2.0 ul Dil. Factor: 1.0000

Sample Info: L5-FULL

Misc. Info.: Plate: 1 Rack: 1

Operator ID: SACINSTLCMS01 Instrument ID: A8_N

Sublist: chrom-A8_N*sub19

Method: \ChromNa\Sacramento\ChromData\A8_N\20170720-45703.b\A8_N.m

Limit Group: LC PFC_DOD ICAL

Last Update: 21-Jul-2017 11:40:24 Calib Date: 20-Jul-2017 18:04:17

Integrator: Picker

Quant Method: Isotopic Dilution Quant By: Initial Calibration

Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20170720-45703.b\2017.07.20ICAL_010.d

Column 1: Det: EXP1

Process Host: XAWRK007

First Level Reviewer: phomsophat Date: 20-Jul-2017 18:24:37

Signal RT EXP DLT RT Response Amount Ratio(Limits) %Rec S/N Flags Flag	First Level Reviewer, prioritsopriat						Date.		20-Jul-2017 16.24.37			
217.00 > 172.00 1.547 1.545 0.002 9277585 51.5 103 32222 2 2 2 2 2 2 2		Signal	RT				Response		Ratio(Limits)	%Rec	S/N	Flags
2 Perfluorobutyric acid 212.90 > 169.00 1.547	ı	D 113C4 PFBA	\									
212.90 > 169.00 1.547		217.00 > 172.00	1.547	1.545	0.002		9277585	51.5		103	32222	
D 3 13C5-PFPeA			,	4 5 40		1 000	0000500	40.0		00 (0007	
267.90 > 223.00 1.747 1.752 -0.005 6226392 52.1 104 57639 4 Perfluoropentanoic acid 262.90 > 219.00 1.747 1.753 -0.006 1.000 6165403 49.6 99.3 3635 D 47 13C3-PFBS 301.90 > 83.00 1.775 1.777 -0.002 149989 NC 5818 5 Perfluorobutanesulfonic acid 298.90 > 80.00 1.775 1.779 -0.004 1.000 10077823 42.4 95.9 6070 298.90 > 99.00 1.775 1.779 -0.004 1.000 4118522 2.45(0.00-0.00) 95.9 5731 61 Sodium 1H,1H,2H,2H-perfluorohexanes 327.00 > 307.00 1.975 1.985 -0.010 1.000 2413036 46.8 100 43763 D 7 13C2 PFHxA 315.00 > 270.00 2.021 2.024 -0.003 5521641 50.0 100 41889 6 Perfluorohexanoic acid 313.00 > 269.00 2.021 2.024 -0.003 1.000 5173116 50.0 99.9 11624 D 9 13C4-PFHpA 367.00 > 322.00 2.350 2.354 -0.004 5168717 53.1 106 24671 10 Perfluoroheptanoic acid 363.00 > 319.00 2.350 2.355 -0.005 1.000 5052067 48.4 96.9 10667 D 11 1802 PFHxS 403.00 > 84.00 2.366 2.369 -0.003 7913061 49.4 49.4 104 55474 8 Perfluorohexanesuslionic acid 38 Perfluorohexanesuslionic acid 49.4 49.				1.549	-0.002	1.000	8328503	49.3		98.6	3907	
4 Perfluoropentanoic acid 262.90 > 219.00 1.747 1.753 0.006 1.000 6165403 49.6 99.3 3635 D 47 13C3-PFBS 301.90 > 83.00 1.775 1.777 0.002 149989 NC 5818 5 Perfluorobutanesulfonic acid 298.90 > 80.00 1.775 1.779 0.004 1.000 10077823 42.4 95.9 6070 298.90 > 99.00 1.775 1.779 0.004 1.000 4118522 2.45(0.00-0.00) 95.9 5731 61 Sodium 1H,1H,2H,≥H-perfluorohexanoic acid 327.00 > 307.00 1.975 1.985 0.010 1.000 2413036 46.8 100 43763 D 7 13C2 PFHxA 315.00 > 270.00 2.021 2.024 0.003 5521641 50.0 100 41889 6 Perfluorohexanoic acid 313.00 > 269.00 2.021 2.024 0.003 1.000 5173116 50.0 99.9 11624 D 9 13C4-PFHpA 367.00 > 322.00 2.350 2.354 0.004 5168717 53.1 106 24671 10 Perfluoroheptanoic acid 363.00 > 319.00 2.350 2.355 0.005 1.000 5052067 48.4 96.9 10667 D 11 1802 PFHxS 403.00 > 84.00 2.366 2.369 0.003 7913061 49.4 104 55474 8 Perfluorohexanesulfonic acid				1 752	-0 005		6226392	52 1		104	57639	
262.90 > 219.00 1.747					0.000		0220072	02.1		101	07007	
301.90 > 83.00		•			-0.006	1.000	6165403	49.6		99.3	3635	
5 Perfluorobutanesulfonic acid 298.90 > 80.00	I	O 47 13C3-PFB	S									
298.90 > 80.00					-0.002		149989	NC			5818	
298.90 > 99.00					0.004	1 000	10077000	40.4		05.0	(070	
61 Sodium 1H,1H,2H,2H-perfluorohexane 327.00 > 307.00 1.975 1.985 -0.010 1.000 2413036 46.8 100 43763 D 7 13C2 PFHxA 315.00 > 270.00 2.021 2.024 -0.003 5521641 50.0 100 41889 6 Perfluorohexanoic acid 313.00 > 269.00 2.021 2.024 -0.003 1.000 5173116 50.0 99.9 11624 D 9 13C4-PFHpA 367.00 > 322.00 2.350 2.354 -0.004 5168717 53.1 106 24671 10 Perfluoroheptanoic acid 363.00 > 319.00 2.350 2.355 -0.005 1.000 5052067 48.4 96.9 10667 D 11 18O2 PFHxS 403.00 > 84.00 2.366 2.369 -0.003 7913061 49.4 104 55474 8 Perfluorohexanesulfonic acid								42.4	2 45(0 00-0 00)			
327.00 > 307.00 1.975							1110022		2. 10(0.00 0.00)	70.7	0701	
315.00 > 270.00 2.021				•			2413036	46.8		100	43763	
6 Perfluorohexanoic acid 313.00 > 269.00 2.021 2.024 -0.003 1.000 5173116 50.0 99.9 11624 D 9 13C4-PFHpA 367.00 > 322.00 2.350 2.354 -0.004 5168717 53.1 106 24671 10 Perfluoroheptanoic acid 363.00 > 319.00 2.350 2.355 -0.005 1.000 5052067 48.4 96.9 10667 D 11 18O2 PFHxS 403.00 > 84.00 2.366 2.369 -0.003 7913061 49.4 104 55474 8 Perfluorohexanesulfonic acid												
313.00 > 269.00 2.021 2.024 -0.003 1.000 5173116 50.0 99.9 11624 D 9 13C4-PFHpA 367.00 > 322.00 2.350 2.354 -0.004 5168717 53.1 106 24671 10 Perfluoroheptanoic acid 363.00 > 319.00 2.350 2.355 -0.005 1.000 5052067 48.4 96.9 10667 D 11 18O2 PFHxS 403.00 > 84.00 2.366 2.369 -0.003 7913061 49.4 104 55474 8 Perfluorohexanesulfonic acid					-0.003		5521641	50.0		100	41889	
D 9 13C4-PFHpA 367.00 > 322.00 2.350 2.354 -0.004 5168717 53.1 106 24671 10 Perfluoroheptanoic acid 363.00 > 319.00 2.350 2.355 -0.005 1.000 5052067 48.4 96.9 10667 D 11 18O2 PFHxS 403.00 > 84.00 2.366 2.369 -0.003 7913061 49.4 104 55474 8 Perfluorohexanesulfonic acid					0.000	1 000	F17011/	F0.0		00.0	11/04	
367.00 > 322.00 2.350 2.354 -0.004 5168717 53.1 106 24671 10 Perfluoroheptanoic acid 363.00 > 319.00 2.350 2.355 -0.005 1.000 5052067 48.4 96.9 10667 D 11 18O2 PFHxS 403.00 > 84.00 2.366 2.369 -0.003 7913061 49.4 104 55474 8 Perfluorohexanesulfonic acid				2.024	-0.003	1.000	51/3116	50.0		99.9	11624	
10 Perfluoroheptanoic acid 363.00 > 319.00 2.350 2.355 -0.005 1.000 5052067 48.4 96.9 10667 D 11 18O2 PFHxS 403.00 > 84.00 2.366 2.369 -0.003 7913061 49.4 104 55474 8 Perfluorohexanesulfonic acid		•		2.354	-0.004		5168717	53.1		106	24671	
363.00 > 319.00 2.350 2.355 -0.005 1.000 5052067 48.4 96.9 10667 D 11 18O2 PFHxS 403.00 > 84.00 2.366 2.369 -0.003 7913061 49.4 104 55474 8 Perfluorohexanesulfonic acid												
403.00 > 84.00 2.366 2.369 -0.003 7913061 49.4 104 55474 8 Perfluorohexanesulfonic acid			•		-0.005	1.000	5052067	48.4		96.9	10667	
8 Perfluorohexanesulfonic acid												
		403.00 > 84.00	2.366	2.369	-0.003		7913061	49.4		104	55474	
399.00 > 80.00 2.300 2.309 -0.003 1.000 /308/52 43.0 94.6 5049						1 000	72/0752	42.0		047	F040	
Dama COO of 4404		377.00 > 80.00	2.366	2.369	-0.003	1.000				94.6	5049	

Report Date: 21-Jul-2017 11:40:25 Chrom Revision: 2.2 26-Jun-2017 08:09:44 \\ChromNa\\Sacramento\\ChromData\\A8_N\20170720-45703.b\\2017.07.20ICAL_007.d Data File: **FXP** DLT REL Amount Signal **RT** RT **RT** Response ng/ml Ratio(Limits) %Rec S/N Flags RT D 12 M2-6:2FTS 429.00 > 409.00 2.678 2.684 -0.006 2522848 48.0 28080 101 13 Sodium 1H,1H,2H,2H-perfluorooctane 427.00 > 407.00 2.678 2.684 -0.006 1.000 46.3 97.7 26706 2110170 * 62 13C2-PFOA 415.00 > 370.00 2.700 2.703 -0.003 4413926 50.0 36251 D 14 13C4 PFOA 27664 417.00 > 372.00 2.700 2.706 -0.006 4478029 51.0 102 15 Perfluorooctanoic acid 413.00 > 369.00 2.707 2.710 -0.003 1.000 4563458 48.7 97.4 785 413.00 > 169.00 2.700 2.710 -0.010 0.997 1.65(0.90-1.10) 97.4 8691 2771428 16 Perfluoroheptanesulfonic Acid 449.00 > 80.00 2.707 2.716 -0.009 48468 1.000 6830714 48.4 102 D 18 13C4 PFOS 3.078 -0.007 5751748 503.00 > 80.00 3.071 48.7 102 31255 17 Perfluorooctane sulfonic acid 3.080 499.00 > 80.00 3.080 0.0 1.000 43.0 92.8 14891 5355867 499.00 > 99.00 3.071 3.080 -0.009 0.997 1124422 4.76(0.90-1.10) 92.8 7234 D 19 13C5 PFNA 468.00 > 423.00 3.080 3.080 0.0 3519863 50.8 102 21365 20 Perfluorononanoic acid 463.00 > 419.00 3.080 49.0 3.081 -0.001 1.000 3449039 98.0 6145 D 21 13C8 FOSA 506.00 > 78.00 3.421 3.422 -0.001 9837940 50.1 100 19306 22 Perfluorooctane Sulfonamide 498.00 > 78.00 3.421 3.422 -0.001 9167796 50.5 101 21260 1.000 D 26 M2-8:2FTS 529.00 > 509.00 3.421 3.428 -0.007 97.8 18763 1838838 46.8 25 Sodium 1H,1H,2H,2H-perfluorodecane 3.428 -0.007 527.00 > 507.00 3.421 1614685 45.8 95.6 20133 D 23 13C2 PFDA

3148440

2780389

1150361

1028023

3520028

1122693

2216403

2110542

Page 631 of 1104 48.6

52.0

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52.4

49.2

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47.2

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94.4

105

98.4

95.3

97.7

106

94.3

97.2

15834

8034

6915

5750

13651

3425

9249

3278

6909

515.00 > 470.00 3.439

D 27 d3-NMeFOSAA

570.00 > 419.00 3.598

599.00 > 80.00 3.744

563.00 > 519.00 3.764

584.00 > 419.00 3.764

D 32 d5-NEtFOSAA 589.00 > 419.00 3.754

D 30 13C2 PFUnA 565.00 > 520.00 3.764

24 Perfluorodecanoic acid 513.00 > 469.00 3.439 3.

573.00 > 419.00 3.587 3.592 -0.005

29 Perfluorodecane Sulfonic acid

31 Perfluoroundecanoic acid

33 N-ethyl perfluorooctane sulfonamid

28 N-methyl perfluorooctane sulfonami

3.438

3.438

3.600 -0.002

3.748 -0.004

3.757 -0.003

3.766 -0.002

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3.766 -0.002

0.001

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1.000

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Report Date: 21-Jul-2017 11:40:25 Chrom Revision: 2.2 26-Jun-2017 08:09:44

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Data File:	\\ChromNa\Sacramento\ChromData\A8_	_N\20170720-45703.b\2017.07.20ICAL_()07.d

Data File.	WCIIIC	Jiliya\3	aciainen	io (Cili Olli	DaiaMo_INZUT	10120-4310	3.0\2017.07.20ICAL	007.u		
Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 34 d-N-MeFO	SA-M									
515.00 > 169.00	3.910	3.910	0.0		2561337	50.8		102	793	
35 MeFOSA										
512.00 > 169.00	3.919	3.916	0.002	1.000	2294511	50.0		100.0	7471	
D 36 13C2 PFD										
615.00 > 570.00		4.059	0.003		2010091	46.1		92.3	4701	
37 Perfluorodo										
613.00 > 569.00		4.059	0.003	1.000	1994038	52.5		105	1935	
D 38 d-N-EtFOS		4 005	0.000		2557205	FO 2		100	F20/	
531.00 > 169.00		4.095	0.002		2557205	50.2		100	5386	
39 N-ethylperflu 526.00 > 169.00		ctanesu 4.103	0.002	1.000	2334866	49.2		98.5	6898	
41 Perfluorotrio			0.002	1.000	2334000	49.2		90.0	0090	
663.00 > 619.00		4.328	-0.002	1.000	1785380	52.2		104	763	
D 43 13C2-PFT		4.020	0.002	1.000	1700000	02.2		104	700	
715.00 > 670.00		4.566	0.001		3992527	49.1		98.2	11233	
42 Perfluoroteti										
712.50 > 668.90		4.567	0.0	1.000	3902732	49.9		99.7	394	
713.00 > 169.00	4.556	4.567	-0.011	0.998	525315		7.43(0.00-0.00)	99.7	5657	
D 44 13C2-PFH	xDA									
815.00 > 770.00	4.970	4.976	-0.006		2070713	48.7		97.5	3929	
45 Perfluorohe	xadecan	oic acid								
813.00 > 769.00	4.979	4.979	0.0	1.000	1701571	49.0		98.0	288	
46 Perfluorooct										
913.00 > 869.00	5.317	5.321	-0.004	1.000	1845337	52.2		104	667	
OC Flag Loc	hand									

OC Flag Legend Processing Flags

NC - Not Calibrated

Reagents:

LCPFC_FULL-L5_00008 Amount Added: 1.00 Units: mL

Report Date: 21-Jul-2017 11:40:25 Chrom Revision: 2.2 26-Jun-2017 08:09:44 TestAmerica Sacramento Data File: **Injection Date:** 20-Jul-2017 17:43:35 Instrument ID: A8_N Lims ID: IC L5 Full Client ID: Operator ID: SACINSTLCMS01 ALS Bottle#: 32 Worklist Smp#: 7 Injection Vol: 2.0 ul Dil. Factor: 1.0000 Method: Limit Group: LC PFC_DOD ICAL $A8_N$ D 113C4 PFBA 2 Perfluorobutyric acid D 313C5-PFPeA Exp1:m/z 217.00 > 172.00:Moving5PtAverage_x Exp1:m/z 212.90 > 169.00:Moving5PtAverage_x Exp1:m/z 267.90 > 223.00:Moving5PtAverage_x (000036 X30 <u>6</u>36 ©28 ©24 × 30-18 18 12 12 12 1.1 1.4 1.7 2.0 2.3 0.8 1.1 1.4 2.0 1.2 1.5 1.8 2.1 5 Perfluorobutanesulfonic acid 5 Perfluorobutanesulfonic acid 4 Perfluoropentanoic acid Exp1:m/z 262.90 > 219.00:Moving5PtAverage_x Exp1:m/z 298.90 > 99.00:Moving5PtAverage_x3 Exp1:m/z 298.90 > 80.00:Moving5PtAverage_x3 642 6036 (000018-000015-012-©28 0024 ×30 18 12 2.3 1.4 2.0 1.9 2.2 2.5 1.9 1.0 1.3 1.6 1.0 1.3 1.6 2.2 2.5 61 Sodium 1H,1H,2H,2H-perfluorohexaDe 7 13C2 PFHxA 6 Perfluorohexanoic acid Exp1:m/z 327.00 > 307.00:Moving5PtAverage_x Exp1:m/z 315.00 > 270.00:Moving5PtAverage_x Exp1:m/z 313.00 > 269.00:Moving5PtAverage_x 24 (12 (X100000) X (X100000) X (X100000) (00020 ×16 (000020 ×16 12 1.5 1.8 2.1 2.7 2.2 2.8 2.2 2.4 1.0 1.6 1.0 1.6 2.8 1.2 D 11 1802 PFHxS 9 13C4-PFHpA 10 Perfluoroheptanoic acid Exp1:m/z 367.00 > 322.00:Moving5PtAverage_> Exp1:m/z 363.00 > 319.00:Moving5PtAverage_x Exp1:m/z 403.00 > 84.00:Moving5PtAverage_x3 21 (000018 (000015 (000015 (000018) (000018) 000015-X 030 025 10 0 0| 0 1.9 2.2 2.5 2.8 1.5 3.0 1.3 1.9 2.5 3.1 1.6

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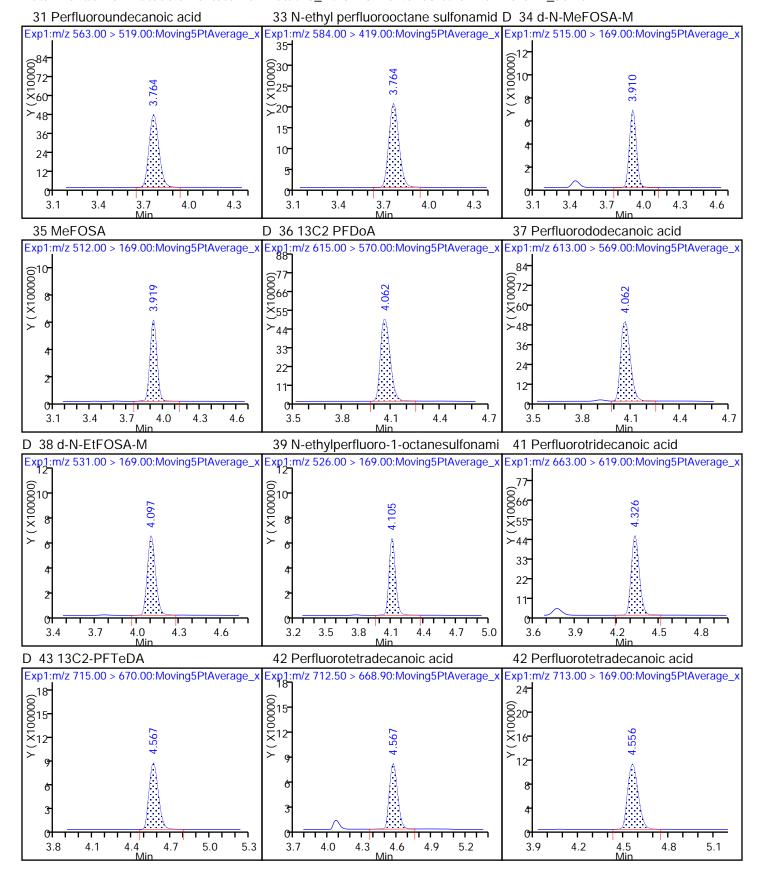
3.1

4.0

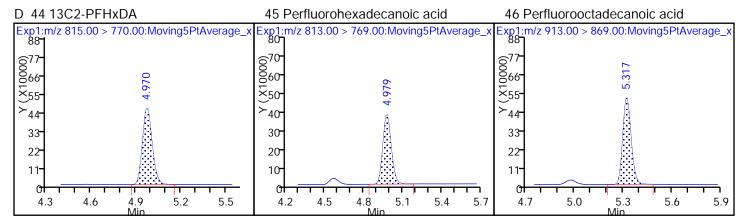
Chrom Revision: 2.2 26-Jun-2017 08:09:44

Report Date: 21-Jul-2017 11:40:25

Report Date: 21-Jul-2017 11:40:25 Chrom Revision: 2.2 26-Jun-2017 08:09:44 Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170720-45703.b\2017.07.20ICAL_007.d



Report Date: 21-Jul-2017 11:40:25 Chrom Revision: 2.2 26-Jun-2017 08:09:44 Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170720-45703.b\2017.07.20ICAL_007.d



Report Date: 21-Jul-2017 11:40:27 Chrom Revision: 2.2 26-Jun-2017 08:09:44

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170720-45703.b\2017.07.20ICAL_008.d

Lims ID: IC L6 Full

Client ID:

Sample Type: IC Calib Level: 6

Inject. Date: 20-Jul-2017 17:50:29 ALS Bottle#: 33 Worklist Smp#: 8

Injection Vol: 2.0 ul Dil. Factor: 1.0000

Sample Info: L6-FULL

Misc. Info.: Plate: 1 Rack: 1

Operator ID: SACINSTLCMS01 Instrument ID: A8_N

Sublist: chrom-A8_N*sub19

Method: \ChromNa\Sacramento\ChromData\A8_N\20170720-45703.b\A8_N.m

Limit Group: LC PFC_DOD ICAL

Last Update: 21-Jul-2017 11:40:27 Calib Date: 20-Jul-2017 18:04:17

Integrator: Picker

Quant Method: Isotopic Dilution Quant By: Initial Calibration

Last ICal File: \ChromNA\Sacramento\ChromData\A8_N\20170720-45703.b\2017.07.20ICAL_010.d

Column 1: Det: EXP1

Process Host: XAWRK007

First Level Reviewer: phomsophat Date: 20-Jul-2017 18:25:04

First Level Revie	wer: pho	omsopha	nt		Date: 20-Jul-2017 18:25:04			<u> </u>		
Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 113C4 PFBA										
217.00 > 172.00		1.545	0.0		8377231	46.5		93.1	28996	
2 Perfluorobut	yric acid									
212.90 > 169.00	1.545	1.549	-0.004	1.000	14335268	94.0		94.0	6369	
D 3 13C5-PFPe										
267.90 > 223.00	1.745	1.752	-0.007		5499850	46.0		92.0	49000	
4 Perfluoroper										
262.90 > 219.00		1.753	-0.008	1.000	10716890	97.7		97.7	6650	
D 47 13C3-PFB		4 777	0.005		1.45000	NO			F (0 0	
301.90 > 83.00		1.777	-0.005		145902	NC			5698	
5 Perfluorobut 298.90 > 80.00	anesulto 1.772	nic acid 1.779	-0.007	1.000	17769760	79.7		90.2	8750	
	1.772	1.779		1.000	7732377	19.1	2.30(0.00-0.00)	90.2	9438	
61 Sodium 1H,							(
327.00 > 307.00		•		1.000	4301810	86.2		92.3	170798	
6 Perfluorohex	anoic ac	cid								
313.00 > 269.00	2.017	2.024	-0.007	1.000	9254644	96.1		96.1	18222	
D 7 13C2 PFHx	Α									
315.00 > 270.00	2.017	2.024	-0.007		5137101	46.5		93.1	32940	
D 9 13C4-PFHp										
367.00 > 322.00	2.347	2.354	-0.007		4705801	48.4		96.7	28343	
10 Perfluorohe	•									
363.00 > 319.00				1.000	9354552	98.5		98.5	14157	
8 Perfluorohex				1 000	14201/40	00.1		07.0	7507	
399.00 > 80.00		2.309	-0.006	1.000	14281648	89.1		97.9	7507	
D 11 18O2 PFH 403.00 > 84.00	xS 2.363	2.369	-0.006		7413535	46.2		97.7	43292	
703.00 / 04.00	2.505	2.307	-0.000		7413333	40.2		71.1	1 3272	

 Report Date: 21-Jul-2017 11:40:27
 Chrom Revision: 2.2 26-Jun-2017 08:09:44

 Data File:
 \\ChromNa\Sacramento\ChromData\A8_N\20170720-45703.b\2017.07.20ICAL_008.d

Data File.	NCIIIC	JIIIVa\Sc	acramen	OCHIOIII	Dala/Ao_IN/201	70720-4370	3.D\2017.07.20ICAL	_006.u		
Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
13 Sodium 1H,	1H,2H,2	H-perflu	orooctan	е						
427.00 > 407.00				1.000	3932933	89.1		94.0	26026	
D 12 M2-6:2FTS 429.00 > 409.00		2.684	-0.007		2442868	46.5		97.8	32909	
* 62 13C2-PFOA 415.00 > 370.00		2.703	-0.004		3856895	50.0			29604	
D 14 13C4 PFO 417.00 > 372.00		2.706	-0.007		3807339	43.4		86.7	30738	
15 Perfluorooc										
413.00 > 369.00 413.00 > 169.00		2.7102.710	-0.011 -0.011	1.000 1.000	8175273 4970194	102.6	1.64(0.90-1.10)	103 103	1409 13400	
16 Perfluorohe										
449.00 > 80.00		2.716	-0.003	1.000	12636679	95.5		100	131820	
D 18 13C4 PFO 503.00 > 80.00		3 078	-0.007		5391084	45.7		95.5	17226	
D 19 13C5 PFN		3.070	-0.007		3371004	43.7		73.3	17220	
468.00 > 423.00	3.071		-0.009		3251409	46.9		93.9	16147	
17 Perfluorooc 499.00 > 80.00			d -0.009	1.000	11092240	95.1		102	273291	
499.00 > 80.00		3.080	-0.009	1.000	2283682	93.1	4.86(0.90-1.10)	102	9306	
20 Perfluorono							,			
463.00 > 419.00	3.071	3.081		1.000	6341679	97.5		97.5	14108	
22 Perfluorooc				1 000	1/070000	04.0		04.0	10504	
498.00 > 78.00 D 21 13C8 FOS		3.422	-0.008	1.000	16079802	94.8		94.8	18524	
506.00 > 78.00		3.422	-0.008		9178999	46.8		93.5	15675	
25 Sodium 1H,		-								
527.00 > 507.00		3.428	-0.005	1.000	2915139	87.5		91.3	22218	
D 26 M2-8:2FTS 529.00 > 509.00		3.428	-0 005		1738290	44.3		92.5	21438	
24 Perfluorode			-0.003		1730270	44.5		72.3	21430	
513.00 > 469.00			-0.006	1.000	4980519	98.1		98.1	10734	
D 23 13C2 PFD	A									
515.00 > 470.00		3.438	-0.006		2711585	44.8		89.6	9376	
D 27 d3-NMeFC 573.00 > 419.00		3.592	0.002		1029158	46.9		93.8	5673	
28 N-methyl pe					1029136	40.9		93.0	3073	
570.00 > 419.00			-0.010	1.000	1961461	105.0		105	7110	
29 Perfluorode	cane Sul	fonic ac	id							
599.00 > 80.00		3.748	-0.011	1.000	6731234	93.7		97.2	13035	
D 32 d5-NEtFOS 589.00 > 419.00		3.757	-0.010		1060235	46.1		92.2	2921	
33 N-ethyl perf	luoroocta									
584.00 > 419.00	3.756	3.766	-0.010	1.003	1817407	100.8		101	9129	
31 Perfluoroun 563.00 > 519.00			-0.010	1.000	3747668	97.1		97.1	4561	
D 30 13C2 PFU		5.700	3.010		3, 1, 500	77.1		,,,,	.501	
565.00 > 520.00		3.766	-0.010		Page 639 ¹ of 1	104 ^{45.6}		91.3	8046	

Report Date: 21-Jul-2017 11:40:27 Chrom Revision: 2.2 26-Jun-2017 08:09:44

Data File:	\\Chr	mNa\Sa	acrament	o\Chrom	Data\A8_N\201	70720-4570	3.b\2017.07.20ICAL	_008.d		
Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 34 d-N-MeFOSA-M										
515.00 > 169.00	3.905	3.910	-0.005		2494419	49.5		98.9	778	
35 MeFOSA										
512.00 > 169.00	3.913	3.916	-0.003	1.000	4515811	101.0		101	6574	
37 Perfluorodo										
613.00 > 569.00		4.059	-0.012	1.000	3884028	97.9		97.9	3506	
D 36 13C2 PFD		4.050	0.010		2101520	40.0		0/ 5	E 4 E 7	
615.00 > 570.00		4.059	-0.012		2101530	48.2		96.5	5456	
D 38 d-N-EtFOS 531.00 > 169.00		<i>1</i> 095	-0.003		2558136	50.2		100	4635	
39 N-ethylperflu					2330130	30.2		100	4033	
526.00 > 169.00				1.000	4779335	100.7		101	6458	
41 Perfluorotrio										
663.00 > 619.00			-0.014	1.000	3395607	94.9		94.9	1285	
D 43 13C2-PFT	eDA									
715.00 > 670.00	4.550	4.566	-0.016		3865134	47.5		95.1	13369	
42 Perfluoroteti	radecan	oic acid								
712.50 > 668.90		4.567	-0.017	1.000	6873007	84.0		84.0	969	
713.00 > 169.00		4.567	-0.017	1.000	923146		7.45(0.00-0.00)	84.0	6931	
D 44 13C2-PFH:		4.077	0.010		20/220/	40.7		07.4	25/0	
815.00 > 770.00		4.976	-0.010		2069286	48.7		97.4	3568	
45 Perfluorohe: 813.00 > 769.00			0.012	1.000	3525628	97.9		97.9	524	
46 Perfluorooct			-0.013	1.000	3020020	71.7		71.7	J Z 4	
913.00 > 869.00			-0.015	1.000	3702487	100.2		100	1235	
OC Flag Led		3.021	2.2.3		5.52.57					
LA FIACLE	111111									

OC Flag Legend Processing Flags

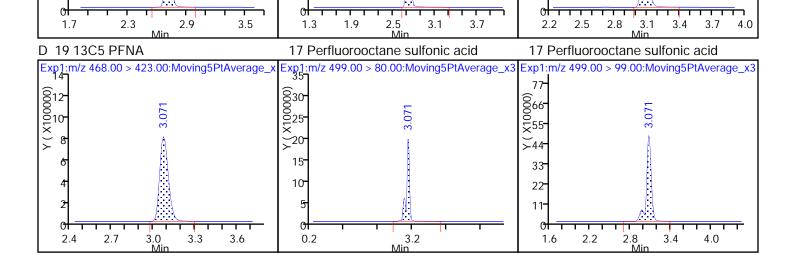
NC - Not Calibrated

Reagents:

LCPFC_FULL-L6_00006 Amount Added: 1.00 Units: mL

Report Date: 21-Jul-2017 11:40:28 Chrom Revision: 2.2 26-Jun-2017 08:09:44 TestAmerica Sacramento Data File: **Injection Date:** 20-Jul-2017 17:50:29 Instrument ID: A8_N Lims ID: IC L6 Full Client ID: Operator ID: SACINSTLCMS01 ALS Bottle#: 33 Worklist Smp#: 8 Injection Vol: 2.0 ul Dil. Factor: 1.0000 Limit Group: LC PFC_DOD ICAL Method: $A8_N$ D 113C4 PFBA 2 Perfluorobutyric acid D 3 13C5-PFPeA Exp1:m/z 217.00 > 172.00:Moving5PtAverage_x Exp1:m/z 267.90 > 223.00:Moving5PtAverage_x Exp1:m/z 212.90 > 169.00:Moving5PtAverage_x (000054 X45 (00001×)24 (00024 00001x) 18 27 12 18 1.2 1.5 1.8 2.1 1.1 1.4 2.0 2.3 0.9 1.2 1.5 1.8 2.1 5 Perfluorobutanesulfonic acid 5 Perfluorobutanesulfonic acid 4 Perfluoropentanoic acid Exp1:m/z 262.90 > 219.00:Moving5PtAverage_x Exp1:m/z 298.90 > 80.00:Moving5PtAverage_x3 Exp1:m/z 298.90 > 99.00:Moving5PtAverage_x3 (000001x) 35 (35⁻ (30) (30) (25⁻ 970 960 ×50∙ -28 >20 >₄₀ 21 15 30 14 10 20 10 2.5 1.5 1.8 2.1 2.4 1.3 1.9 2.2 2.0 2.3 1.2 1.0 1.4 1.1 61 Sodium 1H,1H,2H,2H-perfluorohexan& Perfluorohexanoic acid 7 13C2 PFHxA Exp1:m/z 313.00 > 269.00:Moving5PtAverage_ Exp1:m/z 327.00 > 307.00:Moving5PtAverage_x Exp1:m/z 315.00 > 270.00:Moving5PtAverage_x 21 42 24 (000018-(000015-(000015-(000018-(00 (00020 ×16 836- 12 18 12 1.9 2.5 3.1 0.9 1.5 2.1 1.8 2.1 1.3 2.7 1.5 2.4 2.7 0.7 9 13C4-PFHpA 8 Perfluorohexanesulfonic acid 10 Perfluoroheptanoic acid Exp1:m/z 363.00 > 319.00:Moving5PtAverage_x Exp1:m/z 399.00 > 80.00:Moving5PtAverage_x3 Exp1:m/z 367.00 > 322.00:Moving5PtAverage_> 0042 00035 (018 to 000 15 to 0000 15 to 000 15 035 030 ×₁₂ 28 ≻20 21 15 14 10 0 0 0 1.8 2.1 2.4 2.7 3.0 3.0 1.9 2.5 3.1 1.5 1.3

Report Date: 21-Jul-2017 11:40:28 Chrom Revision: 2.2 26-Jun-2017 08:09:44 Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170720-45703.b\2017.07.20ICAL_008.d D 11 1802 PFHxS 13 Sodium 1H,1H,2H,2H-perfluorooctabe 12 M2-6:2FTS Exp1:m/z 427.00 > 407.00:Moving5PtAverage_x Exp1:m/z 403.00 > 84.00:Moving5PtAverage_x3 Exp1:m/z 429.00 > 409.00:Moving5PtAverage_x Y (X100000) 628 0024 ∑20 12 2.6 2.9 1.3 1.9 2.5 3.1 2.0 2.3 3.2 2.0 2.3 2.6 2.9 3.2 62 13C2-PFOA D 14 13C4 PFOA 15 Perfluorooctanoic acid Exp1:m/z 415.00 > 370.00:Moving5PtAverage_> Exp1:m/z 417.00 > 372.00:Moving5PtAverage_x Exp1:m/z 413.00 > 369.00:Moving5PtAverage_> (0000012 X) × 8 014 0012 030-025-\(\S_{20}\) ∑₁₀ 15 10 \mathbf{o} 2.2 2.2 2.5 2.5 2.8 2.8 2.5 2.8 3.1 3.1 2.2 3.1 15 Perfluorooctanoic acid 16 Perfluoroheptanesulfonic Acid D 18 13C4 PFOS Exp1:m/z 449.00 > 80.00:Moving5PtAverage_x3 Exp1:m/z 413.00 > 169.00:Moving5PtAverage_> Exp1:m/z 503.00 > 80.00:Moving5PtAverage_x3 (49 00042 ×35 (21°000018° ×15° (018⁻ (000015⁻ (12⁻ **≻28** 21



Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170720-45703.b\2017.07.20ICAL_008.d 20 Perfluorononanoic acid 22 Perfluorooctane Sulfonamide D 21 13C8 FOSA Exp1:m/z 463.00 > 419.00:Moving5PtAverage_x Exp1:m/z 498.00 > 78.00:Moving5PtAverage_x3 Exp1:m/z 506.00 > 78.00:Moving5PtAverage_x3 63-(000054-45-00001 00020 (35⁻ (30) (30) (30) (35⁻ (∑₁₆ ∑36- >20 27 15 18 10 3.0 2.4 2.7 3.3 3.6 2.4 3.0 3.6 4.2 2.9 3.2 3.5 3.8 4.1 2.6 25 Sodium 1H,1H,2H,2H-perfluorodecaDe26 M2-8:2FTS 24 Perfluorodecanoic acid Exp1:m/z 513.00 > 469.00:Moving5PtAverage_x Exp1:m/z 527.00 > 507.00:Moving5PtAverage_x Exp1:m/z 529.00 > 509.00:Moving5PtAverage_x (0000010° 8° 4° (0000015 X) ×45 ≻₃₆-27 18 3.5 3.0 3.9 2.9 3.5 2.9 3.2 3.8 4.1 3.3 3.8 D 23 13C2 PFDA D 27 d3-NMeFOSAA 28 N-methyl perfluorooctane sulfonami Exp1:m/z 515.00 > 470.00:Moving5PtAverage_x Exp1:m/z 573.00 > 419.00:Moving5PtAverage_> Exp1:m/z 570.00 > 419.00:Moving5PtAverage_x 77 42 (X100000). ×30 18 33 12 22 11 0 3.0 3.3 3.9 4.0 3.6 2.8 3.1 3.4 3.7 4.3 2.8 3.1 3.4 3.7 4.0 2.7 29 Perfluorodecane Sulfonic acid D 32 d5-NEtFOSAA 33 N-ethyl perfluorooctane sulfonamid Exp1:m/z 584.00 > 419.00:Moving5PtAverage_x 72**-**1 (00001X)16 0036-30-30-63 654 ×₄₅ C₂₄ 18 27 12 18 2.9 3.2 3.5 3.8 4.1 4.4 3.0 3.3 3.6 3.9 4.2 4.5 2.9 3.2 3.5 3.8 4.1 4.4

Chrom Revision: 2.2 26-Jun-2017 08:09:44

Report Date: 21-Jul-2017 11:40:28

Chrom Revision: 2.2 26-Jun-2017 08:09:44

Report Date: 21-Jul-2017 11:40:28

Report Date: 21-Jul-2017 11:40:28 Chrom Revision: 2.2 26-Jun-2017 08:09:44 Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170720-45703.b\2017.07.20ICAL_008.d

45 Perfluorohexadecanoic acid D 44 13C2-PFHxDA 46 Perfluorooctadecanoic acid Exp1:m/z 813.00 > 769.00:Moving5PtAverage_x Exp1:m/z 815.00 > 770.00:Moving5PtAverage_x (0000012⁻ ×10⁻ × 8 (0000012 ×) 9 84 (00001X) 5.306 8 36 24 12 0 0 0 4.9 4.6 5.2 5.5 4.2 4.5 4.8 5.1 5.4 5.7 4.6 4.9 5.2 5.5 5.8 6.1 4.3

Report Date: 21-Jul-2017 11:40:30 Chrom Revision: 2.2 26-Jun-2017 08:09:44

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170720-45703.b\2017.07.20ICAL_009.d

Lims ID: IC L7 Full

Client ID:

Sample Type: IC Calib Level: 7

Inject. Date: 20-Jul-2017 17:57:22 ALS Bottle#: 34 Worklist Smp#: 9

Injection Vol: 2.0 ul Dil. Factor: 1.0000

Sample Info: L7-FULL

Misc. Info.: Plate: 1 Rack: 1

Operator ID: SACINSTLCMS01 Instrument ID: A8_N

Sublist: chrom-A8_N*sub19

Method: \ChromNa\Sacramento\ChromData\A8_N\20170720-45703.b\A8_N.m

Limit Group: LC PFC_DOD ICAL

Last Update: 21-Jul-2017 11:40:30 Calib Date: 20-Jul-2017 18:04:17

Integrator: Picker

Quant Method: Isotopic Dilution Quant By: Initial Calibration

Last ICal File: \ChromNA\Sacramento\ChromData\A8_N\20170720-45703.b\2017.07.20ICAL_010.d

Column 1: Det: EXP1

Process Host: XAWRK007

First Level Reviewer: phomsophat Date: 20-Jul-2017 18:47:49

First Level Revie	wer: pho	msopha	<u>it</u>		Date:	Date: 20-Jul-2017 18:47:4				
Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 113C4 PFBA	١									
217.00 > 172.00	1.542	1.545	-0.003		7833395	43.5		87.0	27098	
2 Perfluorobut	•		0.000	1 000	22244075	1/07		01.4	0001	
212.90 > 169.00 D 3 13C5-PFPe		1.549	0.002	1.000	23214875	162.7		81.4	8821	
267.90 > 223.00		1.752	-0.001		5042456	42.2		84.3	39019	
4 Perfluoroper	ntanoic a	cid								
262.90 > 219.00	1.751	1.753	-0.002	1.000	17723967	176.2		88.1	9621	
D 47 13C3-PFB										
	1.778	1.777	0.001		139538	NC			5396	
5 Perfluorobut 298.90 > 80.00	anesulfo 1.778	nic acid 1.779	-0.001	1.000	28727203	136.1		77.0	10880	
	1.778	1.779	-0.001	1.000	14221686	130.1	2.02(0.00-0.00)	77.0	14321	
61 Sodium 1H,	1H,2H,2	H-perflu	orohexar	ne						
327.00 > 307.00	1.990	1.985	0.005	1.000	8272054	161.2		86.3	63417	
D 7 13C2 PFHx		0.004	0.0		4040500	40.0		07.7	0.4070	
315.00 > 270.00		2.024	0.0		4842529	43.9		87.7	36870	
6 Perfluorohex 313.00 > 269.00		2.024	0.0	1.000	17019818	187.5		93.7	22503	
D 9 13C4-PFHp			0.0		., ., ., .,	.07.10		70.7		
367.00 > 322.00		2.354	0.002		4136580	42.5		85.0	22764	
10 Perfluorohe	•									
363.00 > 319.00		2.355	0.001	1.000	15737233	188.5		94.2	18500	
D 11 1802 PFH 403.00 > 84.00		2.369	0.004		7022702	43.8		92.6	35629	
8 Perfluorohex					7022783	43.0		92.0	33029	
399.00 > 80.00		2.369	0.004	1.000	26096061	171.8		94.4	11704	

 Report Date: 21-Jul-2017 11:40:30
 Chrom Revision: 2.2 26-Jun-2017 08:09:44

 Data File:
 \\ChromNa\Sacramento\ChromData\A8_N\20170720-45703.b\2017.07.20ICAL_009.d

Data File.	WCIIIC	JIIIVa\Sa	acramen		Dala/Ao_IN/201	70720-4370	3.D\2017.07.20ICAL	_009.0		
Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 12 M2-6:2FTS 429.00 > 409.00		2 684	-0.003		2513479	47.8		101	24577	
13 Sodium 1H,	1H,2H,2	H-perflu	orooctan							
427.00 > 407.00 * 62 13C2-PFOA		2.684	-0.003	1.000	7544242	166.1		87.6	345416	
415.00 > 370.00	2.703	2.703	0.0		3429253	50.0			24053	
D 14 13C4 PFO. 417.00 > 372.00		2.706	-0.003		3595203	40.9		81.9	30744	
15 Perfluorooc										
413.00 > 369.00 413.00 > 169.00		2.710 2.710	0.0	1.000 1.000	14387974 8974052	191.2	1.60(0.90-1.10)	95.6 95.6	2766 13689	
16 Perfluorohe	•						,			
449.00 > 80.00 D 18 13C4 PFO		2.716	0.001	1.000	21882659	165.1		86.7	50414	
503.00 > 80.00		3.078	-0.002		5397776	45.7		95.7	13834	
17 Perfluorooct 499.00 > 80.00		onic acid 3.080		1.000	21396229	183.2		98.7	48869	
499.00 > 99.00			-0.004	1.000	4772717	103.2	4.48(0.90-1.10)	98.7	13349	
D 19 13C5 PFN. 468.00 > 423.00		3 080	-0.004		2923565	42.2		84.4	17157	
20 Perfluorono			-0.004		2723303	72.2		04.4	17137	
463.00 > 419.00		3.081	-0.005	1.000	11221107	191.9		96.0	17485	
D 21 13C8 FOS. 506.00 > 78.00		3.422	0.0		8597334	43.8		87.6	15996	
22 Perfluorooc				1 000	07500440	470.4		0/7	40707	
498.00 > 78.00 D 26 M2-8:2FTS		3.422	0.0	1.000	27533112	173.4		86.7	12796	
529.00 > 509.00	3.422				1691570	43.1		90.0	16950	
25 Sodium 1H, 527.00 > 507.00		-	orodecar -0.006	ne 1.000	5746246	177.2		92.5	15851	
D 23 13C2 PFD		020	0.000		07.102.10	.,,,=		72.0		
515.00 > 470.00			-0.007		2465695	40.7		81.5	10526	
24 Perfluorode 513.00 > 469.00			-0.007	1.000	9286312	201.2		101	12794	
D 27 d3-NMeFC 573.00 > 419.00		3 502	-0.002		1050235	47.8		95.7	4723	
28 N-methyl pe					1030233	47.0		73.7	4723	
570.00 > 419.00			-0.010	1.000	3976390	208.5		104	7399	
29 Perfluorode 599.00 > 80.00			-0.001	1.000	12733574	177.1		91.8	9865	
D 32 d5-NEtFOS										
589.00 > 419.00 D 30 13C2 PFU		3.757	0.0		1067375	46.4		92.9	2798	
565.00 > 520.00		3.766	-0.009		1734594	41.3		82.6	6217	
31 Perfluoroun 563.00 > 519.00		acid 3.766	-0.009	1.000	7090167	203.1		102	5186	
33 N-ethyl perf	luoroocta	ane sulfo	onamid							
584.00 > 419.00	3.757	3.766	-0.009	1.000	Page 647 of 1	104 ^{198.5}		99.2	9930	

Report Date: 21-Jul-2017 11:40:30 Chrom Revision: 2.2 26-Jun-2017 08:09:44 Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170720-45703.b\2017.07.20ICAL_009.d

Data File:	NChr	omiva\S	acrameni	OCHROM	Data(A8_N\201	/0/20-45/0	3.b\2017.07.20ICAL	UU9.a		
Cianal	DT	EXP	DLT	REL RT	Docnonco	Amount	Datio(Limits)	0/ Doc	S/N	Flogs
Signal	RT	RT	RT	KI	Response	ng/ml	Ratio(Limits)	%Rec	3/11	Flags
D 34 d-N-MeFOS	SA-M									
515.00 > 169.00	3.907	3.910	-0.003		2566577	50.9		102	890	
35 MeFOSA										
512.00 > 169.00	3.916	3.916	0.0	1.000	9190215	199.8		99.9	7452	
D 36 13C2 PFD	ρA									
615.00 > 570.00	4.052	4.059	-0.007		1999100	45.9		91.8	4409	
37 Perfluorodoo	decanoio	c acid								
613.00 > 569.00	4.052	4.059	-0.007	1.000	7176939	190.1		95.1	5338	
D 38 d-N-EtFOS	A-M									
531.00 > 169.00		4.095	0.002		2546633	50.0		100	3778	
39 N-ethylperflu	uoro-1-o	ctanesu	lfonami							
526.00 > 169.00			0.003	1.000	9376063	198.5		99.3	8597	
41 Perfluorotrid	lecanoic	acid								
663.00 > 619.00	4.323	4.328	-0.005	1.000	6481083	190.4		95.2	2783	
D 43 13C2-PFTe	eDA									
715.00 > 670.00		4.566	-0.015		3577415	44.0		88.0	10076	
42 Perfluorotetr	radecan	oic acid								
712.50 > 668.90	4.563	4.567	-0.004	1.000	13208906	169.7		84.9	2089	
713.00 > 169.00	4.551	4.567	-0.016	0.997	1836536		7.19(0.00-0.00)	84.9	9777	
D 44 13C2-PFH	xDA									
815.00 > 770.00	4.968	4.976	-0.008		1868909	44.0		88.0	3303	
45 Perfluorohex	xadecan	oic acid								
813.00 > 769.00	4.968	4.979	-0.011	1.000	6914779	202.6		101	943	
46 Perfluorooct	adecano	oic acid								
913.00 > 869.00	5.309	5.321	-0.012	1.000	6917166	196.9		98.4	1711	

OC Flag Legend Processing Flags

NC - Not Calibrated

Reagents:

LCPFC_FULL-L7_00004 Amount Added: 1.00 Units: mL

Report Date: 21-Jul-2017 11:40:31 Chrom Revision: 2.2 26-Jun-2017 08:09:44 TestAmerica Sacramento Data File: **Injection Date:** 20-Jul-2017 17:57:22 Instrument ID: A8_N Lims ID: IC L7 Full Client ID: Operator ID: SACINSTLCMS01 ALS Bottle#: 34 Worklist Smp#: 9 Injection Vol: 2.0 ul Dil. Factor: 1.0000 Method: Limit Group: LC PFC_DOD ICAL $A8_N$ D 113C4 PFBA 2 Perfluorobutyric acid D 313C5-PFPeA Exp1:m/z 217.00 > 172.00:Moving5PtAverage_x Exp1:m/z 212.90 > 169.00:Moving5PtAverage_x Exp1:m/z 267.90 > 223.00:Moving5PtAverage_x 60²⁴ 60₂₀ 691- 635 0030 030 ×25 ∑65 ≥ 20 39 15 26 10 13 1.8 1.9 1.7 2.0 1.5 1.0 1.3 1.6 2.2 2.5 5 Perfluorobutanesulfonic acid 5 Perfluorobutanesulfonic acid 4 Perfluoropentanoic acid Exp1:m/z 262.90 > 219.00:Moving5PtAverage_x 80**1** Exp1:m/z 298.90 > 80.00:Moving5PtAverage_x3 Exp1:m/z 298.90 > 99.00:Moving5PtAverage_x3 641 X (X1000000) ©70-060-©56**-**×50 ≻₄₀ 30 24 20 16 2.4 2.5 1.5 1.8 2.1 1.0 1.9 2.2 1.3 1.6 1.2 1.3 1.6 1.9 2.2 2.5 61 Sodium 1H,1H,2H,2H-perfluorohexable 7 13C2 PFHxA 6 Perfluorohexanoic acid Exp1:m/z 327.00 > 307.00:Moving5PtAverage_x Exp1:m/z 315.00 > 270.00:Moving5PtAverage_) Exp1:m/z 313.00 > 269.00:Moving5PtAverage_x 21 (70 (00060 (50 (50 (000018-15-12-<u>8</u>36 00 × × >24 18 30 12 20 10 1.5 2.1 2.7 1.7 2.0 2.6 0.9 1.4 2.3 1.6 2.2 2.8 1.0 D 11 1802 PFHxS 9 13C4-PFHpA 10 Perfluoroheptanoic acid Exp1:m/z 367.00 > 322.00:Moving5PtAverage_x Exp1:m/z 363.00 > 319.00:Moving5PtAverage_> Exp1:m/z 403.00 > 84.00:Moving5PtAverage_x3 28-00024-20-20-(056⁻ 0048⁻ (0000012 ×) > 9 ×40 **≻**32 24 12 16 0 0 1.8 2.1 2.4 2.7 3.0 1.9 2.5 3.1 1.5 1.3

3.3

4.2

2.3

2.6

2.9

3.2

3.5

3.8

2.4

8.0

2.0

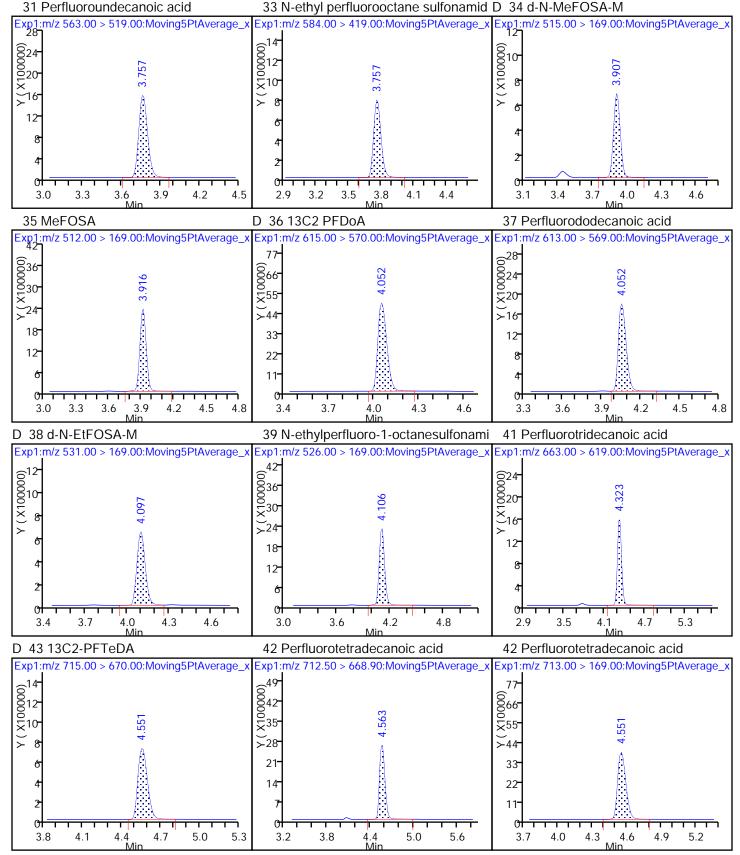
3.2

4.4

1.5

Chrom Revision: 2.2 26-Jun-2017 08:09:44

Report Date: 21-Jul-2017 11:40:31



Report Date: 21-Jul-2017 11:40:31 Chrom Revision: 2.2 26-Jun-2017 08:09:44 Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170720-45703.b\2017.07.20ICAL_009.d

45 Perfluorohexadecanoic acid D 44 13C2-PFHxDA 46 Perfluorooctadecanoic acid Exp1:m/z 815.00 > 770.00:Moving5PtAverage_x Exp1:m/z 813.00 > 769.00:Moving5PtAverage_x Exp1:m/z 913.00 > 869.00:Moving5PtAverage_x (70⁷ (00060 (750⁷ (70) 5.309 >₄₀ 15- 12 30 10 8 20 10 0 0 0 4.9 4.6 5.2 5.5 4.2 4.5 4.8 5.1 5.4 5.7 4.5 4.8 5.1 5.4 5.7 6.0 4.3

Report Date: 21-Jul-2017 11:40:34 Chrom Revision: 2.2 26-Jun-2017 08:09:44

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170720-45703.b\2017.07.20ICAL_010.d

Lims ID: IC M2-4:2FTS

Client ID:

Sample Type: IC Calib Level: 1

Inject. Date: 20-Jul-2017 18:04:17 ALS Bottle#: 37 Worklist Smp#: 10

Injection Vol: 2.0 ul Dil. Factor: 1.0000

Sample Info: M2:4-2FTS Calibration Std

Misc. Info.: Plate: 1 Rack: 1

Operator ID: SACINSTLCMS01 Instrument ID: A8_N

Sublist: chrom-A8_N*sub19

Limit Group: LC PFC_DOD ICAL

Last Update: 21-Jul-2017 11:40:34 Calib Date: 20-Jul-2017 18:04:17

Integrator: Picker

Quant Method: Isotopic Dilution Quant By: Initial Calibration

Last ICal File: \ChromNA\Sacramento\ChromData\A8_N\20170720-45703.b\2017.07.20ICAL_010.d

Column 1: Det: EXP1

Process Host: XAWRK007

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 60 M2-4:2FTS 329.00 > 309.00		1.972	0.0		4111742	NC			41525	
* 62 13C2-PFO <i>A</i> 415.00 > 370.00	-	2.703	-0.015		7012532	50.0			41240	

QC Flag Legend

Processing Flags

NC - Not Calibrated

Reagents:

LCM2-4:2FTSIC_00002 Amount Added: 1.00 Units: mL

Report Date: 21-Jul-2017 11:40:34 Chrom Revision: 2.2 26-Jun-2017 08:09:44

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170720-45703.b\2017.07.20ICAL_010.d

Injection Date: 20-Jul-2017 18:04:17 Instrument ID: A8_N

Lims ID: IC M2-4:2FTS

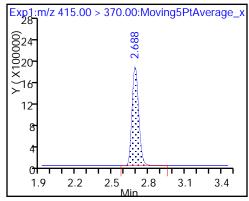
Client ID:

Operator ID: SACINSTLCMS01 ALS Bottle#: 37 Worklist Smp#: 10

Injection Vol: 2.0 ul Dil. Factor: 1.0000

Method: A8_N Limit Group: LC PFC_DOD ICAL

* 62 13C2-PFOA



LCMS BY EXTERNAL STANDARD - INITIAL CALIBRATION DATA RETENTION TIME SUMMARY

Lab Name: TestAmerica Sacramento

Job No.: 320-29732-1

SDG No.: 4 Analy Batch No.: 175476

Instrument ID: A8_N GC Column: GeminiC18 3 ID: 3(mm) Heated Purge: (Y/N) N

Calibration Files:

LEVEL:	LAB SAMPLE ID:	LAB FILE ID:
Level 1	IC 320-175476/3	2017.07.23ICAL 003.d
Level 2	IC 320-175476/4	2017.07.23ICAL 004.d
Level 3	IC 320-175476/5	2017.07.23ICAL 005.d
Level 4	IC 320-175476/6	2017.07.23ICAL 006.d
Level 5	IC 320-175476/7	2017.07.23ICAL 007.d
Level 6	IC 320-175476/8	2017.07.23ICAL 008.d
Level 7	IC 320-175476/9	2017.07.23ICAL 009.d

ANALYTE	LVL 1	LVL 2	LVL 3	LVL 4	LVL 5	LVL 6	LVL 7	RT WINDOW	AVG RT
Perfluorobutanoic acid (PFBA)	1.572	1.563	1.563	1.554	1.565	1.565	1.563	1.314 - 1.814	1.564
Perfluoropentanoic acid (PFPeA)	1.791	1.782	1.782	1.773	1.784	1.784	1.782	1.533 - 2.033	1.783
Perfluorobutanesulfonic acid (PFBS)	1.820	1.810	1.809	1.801	1.802	1.813	1.800	1.628 - 1.988	1.808
4:2 FTS	2.040	2.029	2.029	2.018	2.020	2.032	2.017	1.776 - 2.276	2.026
Perfluorohexanoic acid (PFHxA)	2.086	2.074	2.074	2.063	2.066	2.066	2.063	1.820 - 2.320	2.070
Perfluoroheptanoic acid (PFHpA)	2.438	2.428	2.421	2.416	2.415	2.416	2.407	2.170 - 2.670	2.420
Perfluorohexanesulfonic acid (PFHxS)	2.454	2.444	2.437	2.432	2.431	2.432	2.423	2.186 - 2.686	2.436
6:2FTS	2.785	2.776	2.769	2.764	2.761	2.756	2.748	2.516 - 3.016	2.766
Perfluorooctanoic acid (PFOA)	2.814	2.805	2.797	2.785	2.790	2.785	2.784	2.544 - 3.044	2.794
Perfluoroheptanesulfonic Acid (PFHpS)	2.821	2.812	2.805	2.793	2.790	2.792	2.791	2.551 - 3.051	2.801
Perfluorooctanesulfonic acid (PFOS)	3.198	3.188	3.179	3.170	3.168	3.170	3.160	2.926 - 3.426	3.176
Perfluorononanoic acid (PFNA)	3.205	3.188	3.187	3.170	3.168	3.170	3.169	2.930 - 3.430	3.180
Perfluorooctane Sulfonamide (FOSA)	3.514	3.509	3.508	3.499	3.505	3.510	3.508	3.258 - 3.758	3.508
8:2FTS	3.555	3.538	3.537	3.517	3.515	3.520	3.518	3.278 - 3.778	3.529
Perfluorodecanoic acid (PFDA)	3.565	3.548	3.547	3.537	3.526	3.542	3.529	3.292 - 3.792	3.542
N-methyl perfluorooctane sulfonamidoacetic	3.724	3.707	3.706	3.695	3.691	3.698	3.684	3.451 - 3.951	3.701
acid (NMeFOSAA)									
Perfluorodecanesulfonic acid (PFDS)	3.882	3.857	3.865	3.846	3.845	3.851	3.841	3.605 - 4.105	3.855
N-ethyl perfluorooctane sulfonamidoacetic	3.899	3.884	3.882	3.864	3.864	3.870	3.861	3.625 - 4.125	3.875
acid (NEtFOSAA)									
Perfluoroundecanoic acid (PFUnA)	3.899	3.884	3.882	3.864	3.864	3.870	3.861	3.625 - 4.125	3.875
MeFOSA	3.996	3.990	3.996	3.985	3.984	4.003	3.989	3.742 - 4.242	3.992
Perfluorododecanoic acid (PFDoA)	4.197	4.181	4.178	4.157	4.160	4.158	4.147	3.918 - 4.418	4.168
N-EtFOSA-M	4.178	4.172	4.186	4.174	4.177	4.184	4.174	3.928 - 4.428	4.178
Perfluorotridecanoic Acid (PFTriA)	4.462	4.446	4.443	4.422	4.424	4.430	4.411	4.184 - 4.684	4.434
Perfluorotetradecanoic acid (PFTeA)	4.707	4.691	4.689	4.663	4.661	4.667	4.654	4.426 - 4.926	4.676
Perfluoro-n-hexadecanoic acid (PFHxDA)	+++++	5.108	5.106	5.087	5.081	5.079	5.058	4.842 - 5.342	5.087
Perfluoro-n-octadecanoic acid (PFODA)	5.502	5.480	5.469	5.449	5.442	5.441	5.422	5.208 - 5.708	5.458
13C4 PFBA	1.563	1.563	1.563	1.554	1.555	1.556	1.554	1.308 - 1.808	1.558
13C5 PFPeA	1.791	1.782	1.782	1.773	1.774	1.784	1.773	1.530 - 2.030	1.780
13C2 PFHxA	2.086	2.074	2.074	2.063	2.066	2.066	2.063	1.820 - 2.320	2.070
13C4-PFHpA	2.438	2.428	2.421	2.416	2.415	2.416	2.407	2.170 - 2.670	2.420
1802 PFHxS	2.454	2.444	2.437	2.432	2.431	2.432	2.423	2.186 - 2.686	2.436
M2-6:2FTS	2.785	2.776	2.769	2.764	2.761	2.756	2.748	2.516 - 3.016	2.766

LCMS BY EXTERNAL STANDARD - INITIAL CALIBRATION DATA RETENTION TIME SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-29732-1 Analy Batch No.: 175476

SDG No.:

Instrument ID: A8_N GC Column: GeminiC18 3 ID: 3(mm) Heated Purge: (Y/N) N

ANALYTE	LVL 1	LVL 2	LVL 3	LVL 4	LVL 5	LVL 6	LVL 7	RI	'WINDOW	AVG RT
13C4 PFOA	2.814	2.805	2.797	2.785	2.790	2.785	2.777	2.54	3 - 3.043	2.793
13C4 PFOS	3.198	3.188	3.179	3.170	3.168	3.170	3.160	2.92	26 - 3.426	3.176
13C5 PFNA	3.205	3.188	3.187	3.170	3.168	3.170	3.169	2.93	30 - 3.430	3.180
13C8 FOSA	3.514	3.509	3.508	3.499	3.495	3.510	3.499	3.25	55 - 3.755	3.505
M2-8:2FTS	3.555	3.538	3.537	3.517	3.515	3.520	3.518	3.27	78 - 3.778	3.529
13C2 PFDA	3.565	3.548	3.547	3.527	3.526	3.531	3.529	3.28	3.789	3.539
d3-NMeFOSAA	3.724	3.707	3.706	3.685	3.691	3.687	3.684	3.44	8 - 3.948	3.698
d5-NEtFOSAA	3.890	3.875	3.874	3.855	3.854	3.861	3.851	3.61	6 - 4.116	3.866
13C2 PFUnA	3.899	3.884	3.882	3.864	3.864	3.870	3.861	3.62	25 - 4.125	3.875
d-N-MeFOSA-M	3.989	3.982	3.989	3.977	3.984	3.995	3.989	3.73	86 - 4.236	3.986
13C2 PFDoA	4.197	4.181	4.178	4.157	4.160	4.167	4.147	3.91	9 - 4.419	4.170
d-N-EtFOSA-M	4.170	4.172	4.178	4.165	4.168	4.184	4.174	3.92	23 - 4.423	4.173
13C2-PFTeDA	4.707	4.691	4.689	4.663	4.661	4.667	4.654	4.42	26 - 4.926	4.676
13C2-PFHxDA	5.128	5.108	5.106	5.079	5.081	5.079	5.058	4.84	1 - 5.341	5.091

LCMS BY EXTERNAL STANDARD - INITIAL CALIBRATION DATA CURVE EVALUATION

Lab Name: TestAmerica Sacramento Job No.: 320-29732-1 Analy Batch No.: 175476

SDG No.:

Instrument ID: A8_N GC Column: GeminiC18 3 ID: 3 (mm) Heated Purge: (Y/N) N

Calibration Files:

LEVEL:	LAB SAMPLE ID:	LAB FILE ID:	
Level 1	IC 320-175476/3	2017.07.23ICAL 003.d	
Level 2	IC 320-175476/4	2017.07.23ICAL 004.d	
Level 3	IC 320-175476/5	2017.07.23ICAL 005.d	
Level 4	IC 320-175476/6	2017.07.23ICAL 006.d	
Level 5	IC 320-175476/7	2017.07.23ICAL 007.d	
Level 6	IC 320-175476/8	2017.07.23ICAL 008.d	
Level 7	IC 320-175476/9	2017.07.23ICAL 009.d	

ANALYTE		CF	1		CURVE		COEFFICIENT	#	MIN CF	%RSD			# MIN R^2
	LVL 1 LVL 5	LVL 2 LVL 6	LVL 3 LVL 7	LVL 4	TIPE	В	M1	M2			5K51	OR COD	OR COD
13C4 PFBA	152053 157681	163980 154959	154495 144194	164812	Ave		156024.871			4.6	50.0)	
13C5 PFPeA	112330 113367	113271 107128	114901 97483	114991	Ave		110495.974			5.7	50.0)	
13C2 PFHxA	99251 101483	106825 95312	104111 95869	105244	Ave		101156.454			4.5	50.0)	
13C4-PFHpA	82694 85260	86913 82470	90044 73260	86129	Ave		83824.1743			6.4	50.0)	
1802 PFHxS	132676 140952	140772 136009	138889 130681	142083	Ave		137437.629			3.2	50.0)	
M2-6:2FTS	44370 49800	49627 46134	46905 47140	48942	Ave		47559.6782			4.2	50.0)	
13C4 PFOA	83673 88195	87871 73565	84657 66554	90489	Ave		82143.4457			10.7	50.0)	
13C4 PFOS	109299 107020	110882 109073	108369 107040	105715	Ave		108199.540			1.6	50.0)	
13C5 PFNA	69868 65902	70634 61867	69820 57186	64906	Ave		65740.4057			7.5	50.0)	
13C8 FOSA	180231 189242	187050 179948	182777 175979	184386	Ave		182801.637			2.5	50.0)	
M2-8:2FTS	36776 38858	35522 34801	36506 36177	36861	Ave		36500.1879			3.5	50.0)	
13C2 PFDA	54727 56447	59217 51539	59463 52282	57178	Ave		55836.0714			5.6	50.0)	
d3-NMeFOSAA	21012 22957	20987 21375	21804 22675	21311	Ave		21731.6800			3.6	50.0)	
d5-NEtFOSAA	21868 21108	22646 21365	22738 21137	22655	Ave		21930.9771			3.4	50.0)	

Note: The M1 coefficient is the same as Ave CF for an Ave curve type.

FORM VI LCMS BY EXTERNAL STANDARD - INITIAL CALIBRATION DATA CURVE EVALUATION

Lab Name: TestAmerica Sacramento Job No.: 320-29732-1 Analy Batch No.: 175476

SDG No.:

Instrument ID: A8_N GC Column: GeminiC18 3 ID: 3(mm) Heated Purge: (Y/N) N

ANALYTE		CE	,		CURVE		COEFFICIENT		#	MIN CF	%RSD	#	MAX R^2 # MIN R
	LVL 1 LVL 5	LVL 2 LVL 6	LVL 3 LVL 7	LVL 4	TYPE	В	M1	M2					%RSD OR COD OR CO
13C2 PFUnA	44988 38449	44201 37291	43197 36369	40609	Ave		40729.2057				8.5		50.0
d-N-MeFOSA-M	43738 47802	46683 49088	45921 50400	46173	Ave		47115.0286				4.7		50.0
13C2 PFDoA	44229 43579	48028 44039	45365 41750	45595	Ave		44655.0257				4.4		50.0
d-N-EtFOSA-M	45907 49432	47864 50609	48019 51479	48529	Ave		48833.9629				3.8		50.0
13C2-PFTeDA	86593 82283	87322 74668	84744 74283	78620	Ave		81216.2029				6.7		50.0
13C2-PFHxDA	40457 40950	42593 41518	41778 38464	43387	Ave		41306.8029				3.9		50.0

Note: The M1 coefficient is the same as Ave CF for an Ave curve type.

FORM VI LCMS BY ISOTOPIC DILUTION - INITIAL CALIBRATION DATA CURVE EVALUATION

Lab Name: TestAmerica Sacramento Job No.: 320-29732-1 Analy Batch No.: 175476

SDG No.:

Instrument ID: A8_N GC Column: GeminiC18 3 ID: 3(mm) Heated Purge: (Y/N) N

ANALYTE			RRF			CURVE		COEFFICI	ENT	#	MIN RRF	%RSD		R^2	# MIN R^2
	LVL 1 LVL 6	LVL 2 LVL 7	LVL 3	LVL 4	LVL 5	TYPE	В	M1	M2				%RSD	OR COD	OR COD
Perfluorobutanoic acid (PFBA)	0.9204	0.9010 0.7384	0.9703	0.9219	0.8832	AveID		0.8820				8.5	35.	0	
Perfluoropentanoic acid (PFPeA)	1.3238 1.0162	1.0545 0.8979	1.0382	0.9999	0.9641	AveID		1.0421				12.9	35.	0	
Perfluorobutanesulfonic acid (PFBS)	1.6998 1.3352	1.5456 1.1643	1.6131	1.5877	1.4777	AveID		1.4891				12.3	50.	0	
4:2 FTS	1.1772 0.9459		1.0386	0.9471	0.9206	AveID		0.9713				11.0	35.	0	
Perfluorohexanoic acid (PFHxA)	1.0731 0.9221	0.9512 0.8534	0.9809	0.9481	0.9357	AveID		0.9521				7.0	35.	0	
Perfluoroheptanoic acid (PFHpA)	1.2195 0.9596		1.0084	0.9973				1.0264				9.1	35.	0	
Perfluorohexanesulfonic acid (PFHxS)	1.3400 1.0197		1.0488	1.0267	1.0066	AveID		1.0819				11.8	35.	0	
6:2FTS	0.9739 0.8557		0.9369	0.9112	0.8685	AveID		0.8958				8.4	35.	0	
Perfluorooctanoic acid (PFOA)	1.1606 1.0660			1.1094	1.0181	AveID		1.0668				5.1	35.	0	
Perfluoroheptanesulfonic Acid (PFHpS)	1.1568 1.0561		1.1726	1.1912	1.1318	AveID		1.1216				5.7	50.	0	
Perfluorooctanesulfonic acid (PFOS)	1.1299 0.9935		1.0888	1.0669	1.0166	AveID		1.0572				4.3	35.	0	
Perfluorononanoic acid (PFNA)	1.1047 0.9716	1.0187 0.9554	1.0561	1.0408	0.9796	AveID		1.0181				5.2	35.	0	
Perfluorooctane Sulfonamide (FOSA)	1.0272 0.8960		0.9579	0.9280	0.8811	AveID		0.9018				9.5	35.	0	
8:2FTS	1.0464 0.8769	0.7991	0.9720					0.9107				9.6	35.	0	
Perfluorodecanoic acid (PFDA)	1.1112 0.9934		0.9721	0.9707				0.9799				6.7	35.	0	
N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA)	0.8705 0.9391	0.9213						0.9100				2.5			
Perfluorodecanesulfonic acid (PFDS)	0.6243 0.6204	0.6109 0.6007						0.6225				2.2	50.	0	
N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)	0.8814 0.8445	0.8378		0.8398				0.8488				1.9	35.		
Perfluoroundecanoic acid (PFUnA)	1.2295 1.0508		1.0802	1.0299	1.0189	L2ID	0.1085	1.0255						0.9990	0.9900

Note: The M1 coefficient is the same as Ave RRF for an Ave curve type.

FORM VI LCMS BY ISOTOPIC DILUTION - INITIAL CALIBRATION DATA CURVE EVALUATION

Lab Name: TestAmerica Sacramento Job No.: 320-29732-1 Analy Batch No.: 175476

SDG No.:

Instrument ID: A8_N GC Column: GeminiC18 3 ID: 3(mm) Heated Purge: (Y/N) N

Calibration Start Date: 07/23/2017 13:10 Calibration End Date: 07/23/2017 13:58 Calibration ID: 32678

ANALYTE			RRF			CURVE		COEFFICI	ENT	#	MIN RRF	%RSD	l I	MAX	R^2	# MIN R^2
	LVL 1	LVL 2	LVL 3	LVL 4	LVL 5	TYPE	В	М1	M2					%RSD	OR COD	OR COD
	LVL 6	LVL 7														
MeFOSA	0.9495	0.9226	0.9323	0.8949	0.8832	AveID		0.9183				2.5		35.0		
	0.9322	0.9137														
Perfluorododecanoic acid (PFDoA)	1.0282	0.8102	0.9356	0.9516	0.9917	AveID		0.9292				9.0		35.0		
	0.8184	0.9686														
N-EtFOSA-M	0.9929	0.9027	0.9210	0.9341	0.9138	AveID		0.9274				3.5		35.0		
	0.8945	0.9325														
Perfluorotridecanoic Acid (PFTriA)	0.9003	0.8007	0.8869	0.8608	0.8385	AveID		0.8514				4.1		50.0		
	0.8527	0.8199														
Perfluorotetradecanoic acid (PFTeA)	2.0864	2.2652	2.0671	1.8798	1.7315	AveID		1.9220				11.6		50.0		
	1.7552	1.6691														
Perfluoro-n-hexadecanoic acid (PFHxDA)	+++++	1.3172	0.9121	0.7967	0.7855	L2ID	0.5273	0.7917							1.0000	0.9900
	0.8094	0.8067														
Perfluoro-n-octadecanoic acid (PFODA)	0.9408	0.6844	0.7391	0.7194	0.7336	AveID		0.7652				10.8		50.0		
	0.7740	0.7651														

Note: The M1 coefficient is the same as Ave RRF for an Ave curve type.

LCMS BY EXTERNAL STANDARD - INITIAL CALIBRATION DATA RESPONSE AND CONCENTRATION

Lab Name: TestAmerica Sacramento Job No.: 320-29732-1 Analy Batch No.: 175476

SDG No.:

Instrument ID: A8_N GC Column: GeminiC18 3 ID: 3 (mm) Heated Purge: (Y/N) N

Calibration Files:

LEVEL:	LAB SAMPLE ID:	LAB FILE ID:	
Level 1	IC 320-175476/3	2017.07.23ICAL 003.d	
Level 2	IC 320-175476/4	2017.07.23ICAL 004.d	
Level 3	IC 320-175476/5	2017.07.23ICAL 005.d	
Level 4	IC 320-175476/6	2017.07.23ICAL 006.d	
Level 5	IC 320-175476/7	2017.07.23ICAL 007.d	
Level 6	IC 320-175476/8	2017.07.23ICAL 008.d	
Level 7	IC 320-175476/9	2017.07.23ICAL 009.d	

ANALYTE	CURVE			RESPONSE				CONCEN	NTRATION (N	IG/ML)	
	TYPE	LVL 1 LVL 6	LVL 2 LVL 7	LVL 3	LVL 4	LVL 5	LVL 1 LVL 6	LVL 2 LVL 7	LVL 3	LVL 4	LVL 5
13C4 PFBA	Ave	7602651 7747958	8198998 7209685	7724731	8240620	7884062	50.0 50.0	50.0 50.0	50.0	50.0	50.0
13C5 PFPeA	Ave	5616511 5356421	5663549 4874149	5745028	5749559	5668374	50.0 50.0	50.0 50.0	50.0	50.0	50.0
13C2 PFH×A	Ave	4962539 4765607	5341252 4793468	5205527	5262198	5074168	50.0 50.0	50.0 50.0	50.0	50.0	50.0
13C4-PFHpA	Ave	4134680 4123520	4345666 3662996	4502179	4306431	4262989	50.0 50.0	50.0 50.0	50.0	50.0	50.0
1802 PFHxS	Ave	6275582 6433219	6658501 6181226	6569473	6720545	6667053	47.3 47.3	47.3 47.3	47.3	47.3	47.3
M2-6:2FTS	Ave	2107584 2191385	2357266 2239134	2227990	2324738	2365496	47.5 47.5	47.5 47.5	47.5	47.5	47.5
13C4 PFOA	Ave	4183627 3678248	4393535 3327722	4232863	4524447	4409764	50.0 50.0	50.0 50.0	50.0	50.0	50.0
13C4 PFOS	Ave	5224495 5213679	5300156 5116508	5180018	5053172	5115538	47.8 47.8	47.8 47.8	47.8	47.8	47.8
13C5 PFNA	Ave	3493409 3093351	3531702 2859301	3490997	3245282	3295100	50.0 50.0	50.0 50.0	50.0	50.0	50.0
13C8 FOSA	Ave	9011527 8997387	9352506 8798953	9138842	9219278	9462080	50.0 50.0	50.0 50.0	50.0	50.0	50.0
M2-8:2FTS	Ave	1761561 1666985	1701481 1732871	1748653	1765647	1861315	47.9 47.9	47.9 47.9	47.9	47.9	47.9
13C2 PFDA	Ave	2736338 2576945	2960870 2614091	2973174	2858875	2822332	50.0 50.0	50.0 50.0	50.0	50.0	50.0
d3-NMeFOSAA	Ave	1050614 1068765	1049350 1133763	1090209	1065558	1147829	50.0 50.0	50.0 50.0	50.0	50.0	50.0
d5-NEtFOSAA	Ave	1093392 1068267	1132292 1056852	1136911	1132733	1055395	50.0 50.0	50.0 50.0	50.0	50.0	50.0
13C2 PFUnA	Ave	2249395 1864568	2210040 1818459	2159853	2030463	1922444	50.0 50.0	50.0 50.0	50.0	50.0	50.0

LCMS BY EXTERNAL STANDARD - INITIAL CALIBRATION DATA RESPONSE AND CONCENTRATION

Lab Name: TestAmerica Sacramento

SDG No.:

Instrument ID: A8_N

Calibration Start Date: 07/23/2017 13:10

GD No.: 320-29732-1

Analy Batch No.: 175476

Better No.: 175476

Analy Batch No.: 175476

Better No.: 175476

Column: Geminic18 3 ID: 3(mm)

Heated Purge: (Y/N) N

Calibration Start Date: 07/23/2017 13:58

Calibration ID: 32678

P								CONCEN	CENTRATION (NG/ML)			
	1	YPE -	LVL 1 LVL 6	LVL 2 LVL 7	LVL 3	LVL 4	LVL 5	LVL 1 LVL 6	LVL 2 LVL 7	LVL 3	LVL 4	LVL 5
d-N-MeFOSA-M	A	ve	2186880 2454402	2334174 2520018	2296036	2308671	2390079	50.0 50.0	50.0 50.0	50.0	50.0	50.0
13C2 PFDoA	A	ve	2211449 2201944	2401406 2087489	2268225	2279772	2178974	50.0 50.0	50.0 50.0	50.0	50.0	50.0
d-N-EtFOSA-M	A	ve	2295325 2530450	2393195 2573945	2400939	2426441	2471592	50.0 50.0	50.0 50.0	50.0	50.0	50.0
13C2-PFTeDA	A	ve	4329665 3733385	4366113 3714139	4237183	3931018	4114168	50.0 50.0	50.0 50.0	50.0	50.0	50.0
13C2-PFH×DA	A	ve	2022870 2075916	2129628 1923205	2088906	2169354	2047502	50.0 50.0	50.0 50.0	50.0	50.0	50.0

Curve Type Legend:

Ave = Average

LCMS BY ISOTOPIC DILUTION - INITIAL CALIBRATION DATA RESPONSE AND CONCENTRATION

Lab Name: TestAmerica Sacramento Job No.: 320-29732-1 Analy Batch No.: 175476

SDG No.:

Instrument ID: A8_N GC Column: GeminiC18 3 ID: 3 (mm) Heated Purge: (Y/N) N

Calibration Files:

LEVEL:	LAB SAMPLE ID:	LAB FILE ID:
Level 1	IC 320-175476/3	2017.07.23ICAL 003.d
Level 2	IC 320-175476/4	2017.07.23ICAL 004.d
Level 3	IC 320-175476/5	2017.07.23ICAL 005.d
Level 4	IC 320-175476/6	2017.07.23ICAL 006.d
Level 5	IC 320-175476/7	2017.07.23ICAL 007.d
Level 6	IC 320-175476/8	2017.07.23ICAL 008.d
Level 7	IC 320-175476/9	2017.07.23ICAL 009.d

ANALYTE	IS CUR			RESPONSE				CONCEN	NTRATION (N	G/ML)	
	REF TY	E LVL 1 LVL 6	LVL 2 LVL 7	LVL 3	LVL 4	LVL 5	LVL 1 LVL 6	LVL 2 LVL 7	LVL 3	LVL 4	LVL 5
Perfluorobutanoic acid (PFBA)	Ave	ID 69975 12999409	147752 21295694	749523	3038741	6963312	0.500 100	1.00 200	5.00	20.0	50.0
Perfluoropentanoic acid (PFPeA)	Ave	TD 74351 10886829	119448 17506811	596471	2299701	5464599	0.500 100	1.00 200	5.00	20.0	50.0
Perfluorobutanesulfonic acid (PFBS)	Ave	ID 99684 16053252	192335 26901153	990268	3988481	9206165	0.442 88.4	0.884 177	4.42	17.7	44.2
4:2 FTS	Ave	ID 24392 4075896	42922 7430551	227509	865853	2141036	0.467 93.4	0.934 187	4.67	18.7	46.7
Perfluorohexanoic acid (PFHxA)	Ave	ID 53254 8788456	101614 16363337	510606	1995591	4748124	0.500 100	1.00 200	5.00	20.0	50.0
Perfluoroheptanoic acid (PFHpA)	Ave	TD 50421 7914021	92990 14130024	453995	1717995	4116140	0.500 100	1.00 200	5.00	20.0	50.0
Perfluorohexanesulfonic acid (PFHxS)	Ave	ID 80894 12621118	148222 23173026	662781	2654948	6455854	0.455 91.0	0.910 182	4.55	18.2	45.5
6:2FTS	Ave	ID 20482 3742357	45441 6779939	208291	845572	2050076	0.474 94.8	0.948 190	4.74	19.0	47.4
Perfluorooctanoic acid (PFOA)	Ave	ID 48556 7841830	88318 13780241	454115	2007679	4489705	0.500 100	1.00 200	5.00	20.0	50.0
Perfluoroheptanesulfonic Acid (PFHpS)	Ave	ID 60184 10965918	119224 20645661	604887	2397725	5765727	0.476 95.2	0.952 190	4.76	19.0	47.6
Perfluorooctanesulfonic acid (PFOS)	Ave	ID 57301 10055816	109083 20749676	547466	2093353	5048139	0.464 92.8	0.928 186	4.64	18.6	46.4
Perfluorononanoic acid (PFNA)	Ave	ID 38591 6011197	71952 10926680	368688	1351075	3227789	0.500 100	1.00 200	5.00	20.0	50.0
Perfluorooctane Sulfonamide (FOSA)	Ave	D 92569 16123202	162978 26444981	875387	3422187	8336711	0.500 100	1.00 200	5.00	20.0	50.0
8:2FTS	Ave	ID 18433 2923571	32668 5538945	169963	630739	1539793	0.479 95.8	0.958 192	4.79	19.2	47.9
Perfluorodecanoic acid (PFDA)	Ave	ID 30405 5119744	57947 9589389	289035	1110082	2585881	0.500 100	1.00 200	5.00	20.0	50.0

FORM VI LCMS BY ISOTOPIC DILUTION - INITIAL CALIBRATION DATA RESPONSE AND CONCENTRATION

Lab Name: TestAmerica Sacramento Job No.: 320-29732-1 Analy Batch No.: 175476

SDG No.:

Instrument ID: A8 N GC Column: GeminiC18 3 ID: 3(mm) Heated Purge: (Y/N) N

ANALYTE	IS	CURVE		RESPONSE					CONCEN	NTRATION (NG/ML)			
	REF	TYPE	LVL 1 LVL 6	LVL 2 LVL 7	LVL 3	LVL 4	LVL 5	LVL 1 LVL 6	LVL 2 LVL 7	LVL 3	LVL 4	LVL 5	
N-methyl perfluorooctane		AveID	9146	19166	97239	395381	1039957	0.500	1.00	5.00	20.0	50.0	
sulfonamidoacetic acid (NMeFOSAA)			2007359	4177961				100	200				
Perfluorodecanesulfonic acid (PFDS)		AveID	32887 6522922	65294 12396187	335448	1294446	3217983	0.482 96.4	0.964 193	4.82	19.3	48.2	
N-ethyl perfluorooctane		AveID	9637	18976	97401	380509	890173	0.500	1.00	5.00	20.0	50.0	
sulfonamidoacetic acid (NEtFOSAA)			1804400	3541684				100	200				
Perfluoroundecanoic acid (PFUnA)		L2ID	27657	50978	233311	836437	1958756	0.500	1.00	5.00	20.0	50.0	
			3918710	7069518				100	200				
MeFOSA		AveID	20765	43069	214053	826400	2110821	0.500	1.00	5.00	20.0	50.0	
			4575819	9209985				100	200				
Perfluorododecanoic acid (PFDoA)		AveID	22738	38911	212214	867758	2160889	0.500	1.00	5.00	20.0	50.0	
			3604171	8087946				100	200				
N-EtFOSA-M		AveID	22791	43208	221116	906622	2258565	0.500	1.00	5.00	20.0	50.0	
			4527078	9600643				100	200				
Perfluorotridecanoic Acid (PFTriA)		AveID	19909	38455	201160	784927	1827022	0.500	1.00	5.00	20.0	50.0	
			3755028	6846516				100	200				
Perfluorotetradecanoic acid (PFTeA)		AveID	46140	108795	468872	1714163	3772981	0.500	1.00	5.00	20.0	50.0	
			7729497	13936575				100	200				
Perfluoro-n-hexadecanoic acid		L2ID	+++++	63261	206894	726480	1711676	+++++	1.00	5.00	20.0	50.0	
(PFHxDA)			3564510	6735864				100	200				
Perfluoro-n-octadecanoic acid		AveID	20805	32872	167649	655993	1598412	0.500	1.00	5.00	20.0	50.0	
(PFODA)			3408805	6388834				100	200				

Curve Type Legend:

AveID = Average isotope dilution

L2ID = Linear 1/conc^2 IsoDil

Report Date: 24-Jul-2017 11:24:28 Chrom Revision: 2.2 26-Jun-2017 08:09:44

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170723-45765.b\2017.07.23ICAL_003.d

Lims ID: IC L1 Full

Client ID:

Sample Type: IC Calib Level: 1

Inject. Date: 23-Jul-2017 13:10:08 ALS Bottle#: 28 Worklist Smp#: 3

Injection Vol: 2.0 ul Dil. Factor: 1.0000

Sample Info: L1-FULL

Misc. Info.: Plate: 1 Rack: 1

Operator ID: SACINSTLCMS01 Instrument ID: A8_N

Sublist: chrom-A8_N*sub19

Method: \ChromNa\Sacramento\ChromData\A8_N\20170723-45765.b\A8_N.m

Limit Group: LC PFC_DOD ICAL

Last Update: 24-Jul-2017 11:24:28 Calib Date: 23-Jul-2017 13:58:26

Integrator: Picker

Quant Method: Isotopic Dilution Quant By: Initial Calibration

Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20170723-45765.b\2017.07.23ICAL_010.d

Column 1: Det: EXP1

Process Host: XAWRK004

First Level Reviewer: phomsophat Date: 23-Jul-2017 14:54:09

First Level Revie	wer: pho	msopha	t		Date:	2	23-Jul-2017 14:54:09)		
Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 113C4 PFBA										
217.00 > 172.00		1.558	0.005		7602651	48.7		97.5	46107	
2 Perfluorobut	yric acid									
212.90 > 169.00	1.572	1.564	0.008	1.000	69975	0.5218		104	38.6	
D 3 13C5-PFPe										
267.90 > 223.00		1.780	0.011		5616511	50.8		102	65380	
4 Perfluoroper										
262.90 > 219.00		1.783	0.008	1.000	74351	0.6352		127	49.5	
D 47 13C3-PFB		1.00/	0.014		12/210	NC			4710	
301.90 > 83.00		1.806	0.014		126219	NC			4712	
5 Perfluorobuta 298.90 > 80.00	anesuito 1.820	1.808	0.012	1.000	99684	0.5046		114	127	
	1.820	1.808	0.012	1.000	40913	0.3040	2.44(0.00-0.00)	114	105	
61 Sodium 1H,				ne			,			
327.00 > 307.00			0.014	1.000	24392	0.5660		121	1630	
D 7 13C2 PFHx	:A									
315.00 > 270.00	2.086	2.070	0.016		4962539	49.1		98.1	40745	
6 Perfluorohex	canoic ac	cid								
313.00 > 269.00	2.086	2.070	0.016	1.000	53254	0.5636		113	176	
10 Perfluorohe	•									
363.00 > 319.00		2.420	0.018	1.000	50421	0.5941		119	222	
D 9 13C4-PFHp		0.400	0.040		4404400	40.0		00.7	05054	
367.00 > 322.00		2.420	0.018		4134680	49.3		98.7	25854	
8 Perfluorohex				1 000	00004	0.5/3/		104	227	M
399.00 > 80.00		2.436	0.018	1.000	80894	0.5636		124	236	M
D 11 1802 PFH: 403.00 > 84.00	xS 2.454	2.436	0.018		6275582	45.7		96.5	35940	
703.00 / 04.00	4.404	2.430	0.010		02/3362			70.5	33740	

Report Date: 24-Jul-2017 11:24:28 Chrom Revision: 2.2 26-Jun-2017 08:09:44

Data File:

Data File.	· · · · · · · · · · · · · · · · · · ·	Jiliva	·	Concinoni	Data AO_IVIZO I	10123-4310	5.6/2017.07.231CAL	003.u		
Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 12 M2-6:2FTS 429.00 > 409.00		2.766	0.019		2107584	44.3		93.3	25990	
13 Sodium 1H, 427.00 > 407.00		-	orooctan 0.019		20482	0.5153		109	926	
D 14 13C4 PFO 417.00 > 372.00		2.793	0.021		4183627	50.9		102	29580	
15 Perfluorooct 413.00 > 369.00	2.814		0.020	1.000	48556	0.5440		109	12.2	
413.00 > 169.00		2.794	0.020	1.000	30449		1.59(0.90-1.10)	109	425	
16 Perfluorohe 449.00 > 80.00			0.020	1.000	60184	0.4909		103	2086	
17 Perfluorooct				1 000	57004	0.4050		407	1010	
499.00 > 80.00 499.00 > 99.00		3.176 3.176	0.022 0.022	1.000 1.000	57301 13200	0.4959	4.34(0.90-1.10)	107 107	1218 145	
D 18 13C4 PFO		0.477			5004405	40.0		101	007/4	
503.00 > 80.00 20 Perfluoronoi		3.176 cid	0.022		5224495	48.3		101	23764	
463.00 > 419.00		3.180	0.025	1.000	38591	0.5425		109	133	
D 19 13C5 PFN/ 468.00 > 423.00		3.180	0.025		3493409	53.1		106	23963	
D 21 13C8 FOS		3.100	0.023		3473407	55.1		100	23703	
506.00 > 78.00		3.505	0.009		9011527	49.3		98.6	17630	
22 Perfluorooct 498.00 > 78.00		fonamide 3.508	0.006	1.000	92569	0.5695		114	2269	
D 26 M2-8:2FTS	;									
529.00 > 509.00		3.528	0.027		1761561	48.3		101	26196	
25 Sodium 1H, 527.00 > 507.00		•	orodecar 0.027	ne 1.000	18433	0.5504		115	979	
D 23 13C2 PFD/		0.500	0.007		070/000	40.0		00.0	0/70	
515.00 > 470.00 24 Perfluorodeo		3.539 cid	0.026		2736338	49.0		98.0	9672	
513.00 > 469.00		3.542	0.023	1.000	30405	0.5670		113	152	
D 27 d3-NMeFO 573.00 > 419.00		3.698	0.026		1050614	48.3		96.7	13899	
28 N-methyl pe					1030014	40.3		90.7	13077	
570.00 > 419.00				1.000	9146	0.4783		95.7	491	
29 Perfluorodeo 599.00 > 80.00			id 0.027	1.000	32887	0.4834		100	1596	
D 32 d5-NEtFOS 589.00 > 419.00		3.866	0.024		1093392	49.9		99.7	4339	
D 30 13C2 PFUr 565.00 > 520.00	nΑ	3.875	0.024		2249395	55.2		110	13924	
31 Perfluoround 563.00 > 519.00	decanoio		0.024	1.000	27657	0.4937		98.7	87.2	
33 N-ethyl perfl				1.000	27007	0.4737		70.1	01.2	
584.00 > 419.00	3.899		0.024	1.002	9637	0.5192		104	309	
D 34 d-N-MeFO3 515.00 > 169.00		3.986	0.003		2186880 Page 667 of 1	104 46.4		92.8	831	

Report Date: 24-Jul-2017 11:24:28 Chrom Revision: 2.2 26-Jun-2017 08:09:44 Data File:

Data File.	NOTIF	Jiliva	acrament		Data A6_N\201	70723-4370	3.0/2017.07.23ICAL	003.u		
Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
35 MeFOSA										
512.00 > 169.00	3 996	3.992	0.004	1.000	20765	0.5170		103	808	
37 Perfluorodo			0.001	1.000	20700	0.0170		100	000	
613.00 > 569.00		4.168	0.029	1.000	22738	0.5533		111	7.4	
D 36 13C2 PFD		1.100	0.027	1.000	22700	0.0000			,	
615.00 > 570.00		4.169	0.028		2211449	49.5		99.0	4699	
D 38 d-N-EtFOS		4.107	0.020		2211447	47.0		77.0	4077	
531.00 > 169.00		A 173	-0.003		2295325	47.0		94.0	5167	
39 N-ethylperflu					2273323	47.0		74.0	3107	
526.00 > 169.00				1.000	22791	0.5354		107	774	
			0.0	1.000	22171	0.5554		107	,,,	
41 Perfluorotrio 663.00 > 619.00		4.434	0.028	1.000	19909	0.5287		106	6.4	
		4.434	0.020	1.000	17707	0.3207		100	0.4	
D 43 13C2-PFT6 715.00 > 670.00		4.676	0.031		4329665	53.3		107	12255	
			0.031		4329000	55.5		107	12233	
42 Perfluoroteti			0.021	1 000	46140	0.5428		100	4.0	
712.50 > 668.90 713.00 > 169.00		4.676 4.676	0.031 0.020	1.000 0.998	46140 7507	0.3428	6.15(0.00-0.00)	109 109	4.8 140	
		4.070	0.020	0.770	7307		0.13(0.00-0.00)	107	140	
D 44 13C2-PFH: 815.00 > 770.00		5.091	0.037		2022870	49.0		97.9	6796	
			0.037		2022070	49.0		97.9	0790	
45 Perfluorohe			0.027	1 000	4201F	0.5052		117	0.7	
813.00 > 769.00		5.092	0.036	1.000	43815	0.5853		117	9.6	
46 Perfluorooct			0.044	1 000	20005	0 (4.47		400	44.4	
913.00 > 869.00	5.502	5.458	0.044	1.000	20805	0.6147		123	11.1	

QC Flag Legend Processing Flags

NC - Not Calibrated

Review Flags

M - Manually Integrated

Reagents:

LCPFC_FULL-L1_00005 Units: mL Amount Added: 1.00

Report Date: 24-Jul-2017 11:24:28 Chrom Revision: 2.2 26-Jun-2017 08:09:44 TestAmerica Sacramento Data File: **Injection Date:** 23-Jul-2017 13:10:08 Instrument ID: A8_N Lims ID: IC L1 Full Client ID: Operator ID: SACINSTLCMS01 ALS Bottle#: 28 Worklist Smp#: 3 Injection Vol: 2.0 ul Dil. Factor: 1.0000 Method: Limit Group: LC PFC_DOD ICAL $A8_N$ D 113C4 PFBA 2 Perfluorobutyric acid D 313C5-PFPeA Exp1:m/z 212.90 > 169.00:Moving5PtAverage_x Exp1:m/z 267.90 > 223.00:Moving5PtAverage_x Exp1:m/z 217.00 > 172.00:Moving5PtAverage_> 28 (00030 X25 (000024 X) 630 $\stackrel{\smile}{\times}_{25}$. 16 ≻20 ≻₂₀-12 15 15 10 10 1.0 1.6 1.3 1.9 2.2 1.4 1.7 2.0 1.0 1.3 1.6 1.9 2.2 2.5 5 Perfluorobutanesulfonic acid 5 Perfluorobutanesulfonic acid 4 Perfluoropentanoic acid Exp1:m/z 262.90 > 219.00:Moving5PtAverage_x Exp1:m/z 298.90 > 80.00:Moving5PtAverage_x3 Exp1:m/z 298.90 > 99.00:Moving5PtAverage x3 18-35- 49 ©30 ×25 642 ×35 ∑ ≻28 ⁻20 21 15 10 14 1.8 2.1 2.4 1.5 1.8 2.1 2.4 1.8 2.1 2.4 1.5 1.2 1.2 1.5 2.7 61 Sodium 1H,1H,2H,2H-perfluorohexaDe 7 13C2 PFHxA 6 Perfluorohexanoic acid Exp1:m/z 327.00 > 307.00:Moving5PtAverage_x Exp1:m/z 315.00 > 270.00:Moving5PtAverage_x Exp1:m/z 313.00 > 269.00:Moving5PtAverage_x 21 24 12 (000018-15-12-(X1000 X) × ©20 ×16 12 01 1.8 2.1 1.9 2.2 1.8 2.1 1.5 2.4 1.6 2.5 2.8 1.5 2.4 2.7 1.3 10 Perfluoroheptanoic acid 9 13C4-PFHpA 8 Perfluorohexanesulfonic acid (M) Exp1:m/z 399.00 > 80.00:Moving5PtAverage_x3 Exp1:m/z 363.00 > 319.00:Moving5PtAverage_x Exp1:m/z 367.00 > 322.00:Moving5PtAverage_x 21 30 618 000 15 0018 ×15 <u>@</u>25 15 10 0 0 3.0 2.0 2.3 2.6 2.9 3.2 1.8 2.1 2.4 2.7 3.0 1.7 2.1 Page 669 rof 1.8

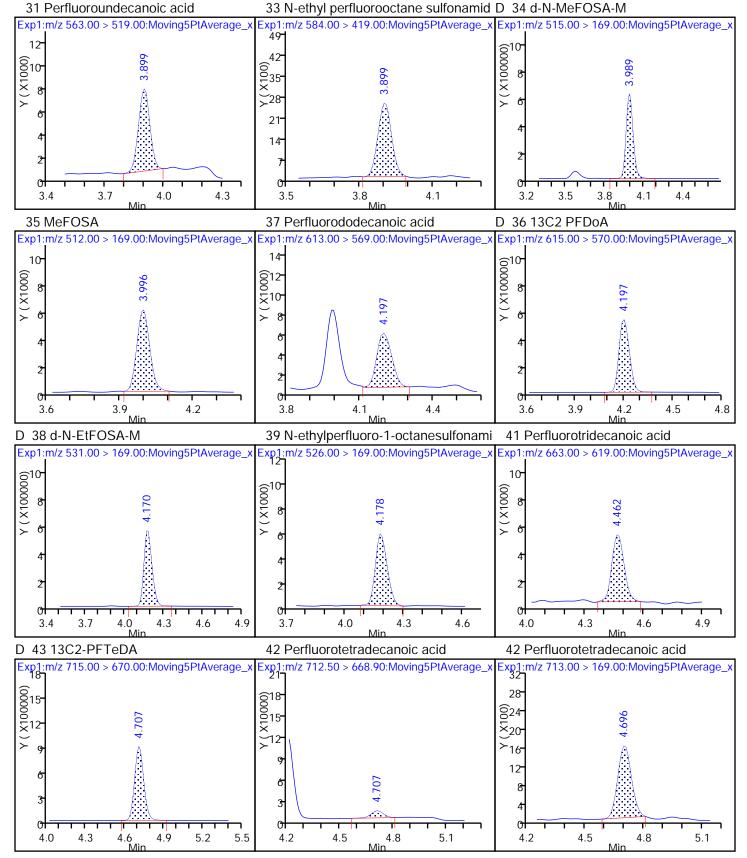
Chrom Revision: 2.2 26-Jun-2017 08:09:44

Report Date: 24-Jul-2017 11:24:28

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170723-45765.b\2017.07.23ICAL_003.d D 19 13C5 PFNA D 21 13C8 FOSA 22 Perfluorooctane Sulfonamide Exp1:m/z 498.00 > 78.00:Moving5PtAverage_x3 Exp1:m/z 468.00 > 423.00:Moving5PtAverage_x Exp1:m/z 506.00 > 78.00:Moving5PtAverage_x3 (35⁻ 00030 X25⁻ (X100000) X (X1000000) 8 630 630 ≻20 20 15 15 10 10 3.5 2.4 2.7 3.0 3.3 3.6 3.9 2.9 3.2 3.5 3.8 4.1 2.9 3.2 3.8 4.1 2.6 25 Sodium 1H,1H,2H,2H-perfluorodecane23 13C2 PFDA D 26 M2-8:2FTS Exp1:m/z 527.00 > 507.00:Moving5PtAverage_x Exp1:m/z 515.00 > 470.00:Moving5PtAverage_x Exp1:m/z 529.00 > 509.00:Moving5PtAverage_) Y (X100000) 77 63- \(\Section 45\) Σ_{55} ≻₃₆ 27 33 22 18 11-0 3.6 3.9 3.7 3.1 3.4 4.0 3.3 3.1 3.4 24 Perfluorodecanoic acid D 27 d3-NMeFOSAA 28 N-methyl perfluorooctane sulfonami Exp1:m/z 513.00 > 469.00:Moving5PtAverage_> Exp1:m/z 573.00 > 419.00:Moving5PtAverage_> Exp1:m/z 570.00 > 419.00:Moving5PtAverage_x 14 35- 6036 0036 0012 X X X 8 ×30 ≻20 **≻**24 15 18 12 10 0 0 3.3 3.6 3.9 3.3 3.9 4.2 4.5 3.5 3.8 3.0 3.0 3.6 3.2 4.1 29 Perfluorodecane Sulfonic acid D 30 13C2 PFUnA D 32 d5-NEtFOSAA Exp1:m/z 599.00 > 80.00:Moving5PtAverage_x3 Exp1:m/z 589.00 > 419.00:Moving5PtAverage_x Exp1:m/z 565.00 > 520.00:Moving5PtAverage_) 42 14 91 00036 ×30 ×24 0678-065-165-(0012 X) X 18 39 12 26⁻ 13 0 3.4 3.7 4.0 4.3 3.2 3.5 3.8 4.1 4.4 3.2 3.5 4.1 4.4

Chrom Revision: 2.2 26-Jun-2017 08:09:44

Report Date: 24-Jul-2017 11:24:28



Report Date: 24-Jul-2017 11:24:28 Chrom Revision: 2.2 26-Jun-2017 08:09:44 Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170723-45765.b\2017.07.23ICAL_003.d

46 Perfluorooctadecanoic acid 45 Perfluorohexadecanoic acid D 44 13C2-PFHxDA Exp1:m/z 815.00 > 770.00:Moving5PtAverage_x 5.502 (77-(00066-(755-86 649 0041-× 33 5.128 674- ×62-≻₅₀ 5.128 25 33 38 17 26- 22 11 14 0 5.0 Mir 4.7 5.3 5.6 4.7 5.0 5.3 5.6 5.2 5.5 5.8 4.4

Report Date: 24-Jul-2017 11:24:28 Chrom Revision: 2.2 26-Jun-2017 08:09:44 Manual Integration/User Assign Peak Report

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170723-45765.b\2017.07.23ICAL_003.d

Injection Date: 23-Jul-2017 13:10:08 Instrument ID: A8_N

Lims ID: IC L1 Full

Client ID:

Operator ID: SACINSTLCMS01 ALS Bottle#: 28 Worklist Smp#: 3

Injection Vol: 2.0 ul Dil. Factor: 1.0000

Method: A8_N Limit Group: LC PFC_DOD ICAL

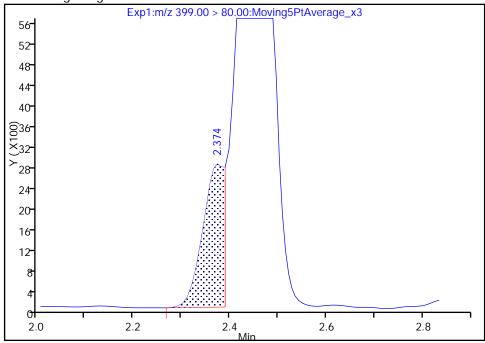
Column: Detector EXP1

8 Perfluorohexanesulfonic acid, CAS: 355-46-4

Signal: 1

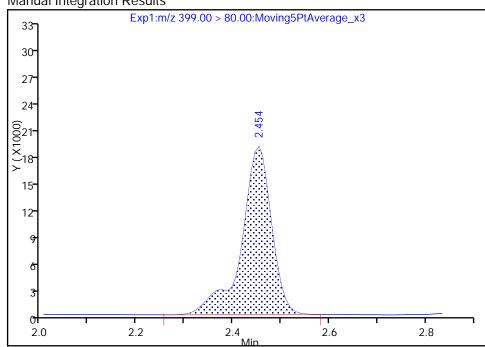
RT: 2.37
Area: 8339
Amount: 0.065370
Amount Units: ng/ml

Processing Integration Results



RT: 2.45
Area: 80894
Amount: 0.563559
Amount Units: ng/ml

Manual Integration Results



Reviewer: phomsophat, 23-Jul-2017 14:56:42

Audit Action: Assigned Compound ID

Audit Reason: Assign Peak

Page 674 of 1104

Report Date: 24-Jul-2017 11:24:28 Chrom Revision: 2.2 26-Jun-2017 08:09:44 Manual Integration/User Assign Peak Report

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170723-45765.b\2017.07.23ICAL_003.d

Injection Date: 23-Jul-2017 13:10:08 Instrument ID: A8_N

Lims ID: IC L1 Full

Client ID:

Operator ID: SACINSTLCMS01 ALS Bottle#: 28 Worklist Smp#: 3

Injection Vol: 2.0 ul Dil. Factor: 1.0000

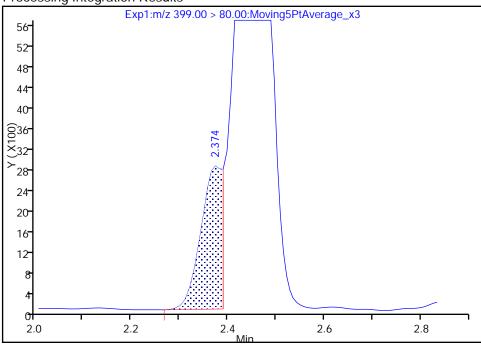
Method: A8_N Limit Group: LC PFC_DOD ICAL

Column: Detector EXP1

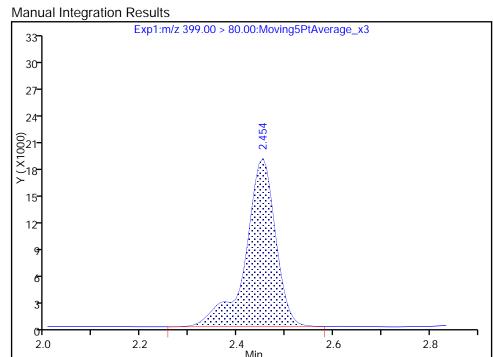
8 Perfluorohexanesulfonic acid, CAS: 355-46-4

Signal: 1

RT: 2.37 Area: 8339 Amount: 0.065370 Amount Units: ng/ml **Processing Integration Results**



RT: 2.45 Area: 80894 Amount: 0.563559 Amount Units: ng/ml



Reviewer: phomsophat, 23-Jul-2017 14:56:51

Audit Action: Manually Integrated

Audit Reason: Assign Peak

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Report Date: 24-Jul-2017 11:24:32 Chrom Revision: 2.2 26-Jun-2017 08:09:44

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170723-45765.b\2017.07.23ICAL_004.d

Lims ID: IC L2 Full

Client ID:

Sample Type: IC Calib Level: 2

Inject. Date: 23-Jul-2017 13:17:02 ALS Bottle#: 29 Worklist Smp#: 4

Injection Vol: 2.0 ul Dil. Factor: 1.0000

Sample Info: L2-FULL

Misc. Info.: Plate: 1 Rack: 1

Operator ID: SACINSTLCMS01 Instrument ID: A8_N

Sublist: chrom-A8_N*sub19

Method: \ChromNa\Sacramento\ChromData\A8_N\20170723-45765.b\A8_N.m

Limit Group: LC PFC_DOD ICAL

Last Update: 24-Jul-2017 11:24:31 Calib Date: 23-Jul-2017 13:58:26

Integrator: Picker

Quant Method: Isotopic Dilution Quant By: Initial Calibration

Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20170723-45765.b\2017.07.23ICAL_010.d

Column 1: Det: EXP1

Process Host: XAWRK004

First Level Reviewer: phomsophat Date: 23-Jul-2017 14:54:47

First Level Revie	wer: pho	msopha	<u>it</u>		Date:	2	23-Jul-2017 14:54:47	!		
Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 113C4 PFBA	1									
217.00 > 172.00		1.558	0.005		8198998	52.5		105	44099	
2 Perfluorobut	yric acid									
212.90 > 169.00	1.563	1.564	-0.001	1.000	147752	1.02		102	80.3	
D 3 13C5-PFP€										
267.90 > 223.00		1.780	0.002		5663549	51.3		103	82842	
4 Perfluoroper			0.004	1 000	440440	4.04		404	70.0	
262.90 > 219.00		1.783	-0.001	1.000	119448	1.01		101	79.9	
D 47 13C3-PFB 301.90 > 83.00		1.806	0.004		133834	NC			5082	
5 Perfluorobut			0.004		133034	NC			3062	
298.90 > 80.00	1.810	1.808	0.002	1.000	192335	0.9175		104	214	
	1.810	1.808	0.002	1.000	80232	0.7170	2.40(0.00-0.00)	104	202	
61 Sodium 1H,	1H,2H,2	H-perflu	orohexar	ne						
327.00 > 307.00	2.029	2.026	0.003	1.000	42922	0.8904		95.3	2858	
6 Perfluorohex										
313.00 > 269.00	2.074	2.070	0.004	1.000	101614	1.00		99.9	322	
D 7 13C2 PFHx										
315.00 > 270.00		2.070	0.004		5341252	52.8		106	46134	
D 9 13C4-PFH _p		2 420	0.000		4245///	F1 0		104	20052	
367.00 > 322.00		2.420	0.008		4345666	51.8		104	28853	
10 Perfluorohe 363.00 > 319.00	•	2.420	0.008	1.000	92990	1.04		104	349	
D 11 18O2 PFH		2.420	0.000	1.000	72770	1.04		104	347	
403.00 > 84.00		2.436	0.008		6658501	48.4		102	32490	
8 Perfluorohex								-		
399.00 > 80.00		2.436	0.008	1.000	148222	0.9732		107	343	

Data File.	· · · · · · · · · · · · · · · · · · ·	Jiiii Va 10 C	·	.010111011	1Data/A0_11/201	10123-4310	5.6(2017.07.25)CAI	 00+.u		
Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
* 62 13C2-PFOA 415.00 > 370.00		2.740	0.058		4411799	50.0			34925	
13 Sodium 1H, 427.00 > 407.00		-		e 1.000	45441	1.02		108	2064	
D 12 M2-6:2FTS 429.00 > 409.00		2.766	0.010		2357266	49.6		104	28772	
D 14 13C4 PFO 417.00 > 372.00		2.793	0.012		4393535	53.5		107	29376	
15 Perfluorooct 413.00 > 369.00 413.00 > 169.00	2.805	2.794 2.794 2.794	0.011 0.011	1.000 1.000	88318 59111	0.9422	1.49(0.90-1.10)	94.2 94.2	21.1 701	
16 Perfluorohe 449.00 > 80.00	2.812	fonic Aci 2.801	id 0.011	1.000	119224	0.9587		101	5409	
D 18 13C4 PFOS 503.00 > 80.00	3.188	3.176	0.012		5300156	49.0		102	24562	
17 Perfluorooct 499.00 > 80.00 499.00 > 99.00	3.188	onic acio 3.176 3.176	0.012 0.012	1.000 1.000	109083 21100	0.9306	5.17(0.90-1.10)	100 100	1796 196	
D 19 13C5 PFN/ 468.00 > 423.00		3.180	0.008		3531702	53.7		107	23345	
20 Perfluoronoi 463.00 > 419.00		cid 3.180	0.008	1.000	71952	1.00		100	293	
D 21 13C8 FOS		3.505	0.004		9352506	51.2		102	10623	
22 Perfluorooct 498.00 > 78.00	3.509	3.508	0.001	1.000	162978	0.9662		96.6	3320	
25 Sodium 1H, 527.00 > 507.00	3.538	•		ne 1.000	32668	1.01		105	1398	
D 26 M2-8:2FTS 529.00 > 509.00	3.538	3.528	0.010		1701481	46.6		97.3	22393	
D 23 13C2 PFD/ 515.00 > 470.00	3.548	3.539	0.009		2960870	53.0		106	7617	
24 Perfluorodeo 513.00 > 469.00	3.548	cid 3.542	0.006	1.000	57947	1.00		99.9	263	
D 27 d3-NMeFO 573.00 > 419.00	3.707	3.698	0.009		1049350	48.3		96.6	10009	
28 N-methyl pe 570.00 > 419.00	3.707	3.701	0.006	1.000	19166	1.00		100	671	
29 Perfluorodeo 599.00 > 80.00	3.857	lfonic aci 3.855	id 0.002	1.000	65294	0.9460		98.1	1962	
D 32 d5-NEtFOS 589.00 > 419.00	3.875	3.866	0.009		1132292	51.6		103	3234	
33 N-ethyl perfl 584.00 > 419.00	3.884	3.875	onamid 0.009	1.002	18976	0.9872		98.7	570	
31 Perfluoround 563.00 > 519.00	3.884	acid 3.875	0.009	1.000	50978	1.02		102	163	
D 30 13C2 PFUt 565.00 > 520.00		3.875	0.009		Page 677 of 1	104 54.3		109	11070	

Chrom Revision: 2.2 26-Jun-2017 08:09:44 Report Date: 24-Jul-2017 11:24:32

Data File:	\\ChromNa\Sacramento\ChromData\A8_	_N\20170723-45765.b\2017.07.23ICAL_004.d

Data File.	NOTIL	JIIIVa\3	aciainen	UICHIOH	Daia/A0_N\ZUT	10123-4370	3.D\2017.07.23ICAL	004.u		
Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 34 d-N-MeFOS	SA-M									
515.00 > 169.00		3.986	-0.004		2334174	49.5		99.1	819	
35 MeFOSA										
512.00 > 169.00	3.990	3.992	-0.002	1.000	43069	1.00		100	1657	
37 Perfluorodo	decanoio	cacid								
613.00 > 569.00	4.181	4.168	0.013	1.000	38911	0.8719		87.2	12.3	
D 36 13C2 PFD	οA									
615.00 > 570.00	4.181	4.169	0.012		2401406	53.8		108	5839	
D 38 d-N-EtFOS	A-M									
531.00 > 169.00	4.172	4.173	-0.001		2393195	49.0		98.0	5695	
39 N-ethylperflu	uoro-1-o	ctanesu	lfonami							
526.00 > 169.00	4.172	4.178	-0.006	1.000	43208	0.9734		97.3	1710	
41 Perfluorotrid	lecanoic	acid								
663.00 > 619.00	4.446	4.434	0.012	1.000	38455	0.9404		94.0	13.5	
42 Perfluorotetr	radecan	oic acid								
712.50 > 668.90	4.691	4.676	0.015	1.000	108795	1.18		118	9.7	
713.00 > 169.00	4.681	4.676	0.005	0.998	12111		8.98(0.00-0.00)	118	216	
D 43 13C2-PFT6										
715.00 > 670.00	4.691	4.676	0.015		4366113	53.8		108	18079	
D 44 13C2-PFH	xDA									
815.00 > 770.00	5.108	5.091	0.017		2129628	51.6		103	6594	
45 Perfluorohex	xadecan	oic acid								
813.00 > 769.00	5.108	5.092	0.016	1.000	63261	1.00		99.8	13.9	
46 Perfluorooct										
913.00 > 869.00	5.480	5.458	0.022	1.000	32872	0.8944		89.4	17.2	
OC Flag Loc	nond									

OC Flag Legend Processing Flags

NC - Not Calibrated

Reagents:

LCPFC_FULL-L2_00006 Amount Added: 1.00 Units: mL

Report Date: 24-Jul-2017 11:24:32 Chrom Revision: 2.2 26-Jun-2017 08:09:44 TestAmerica Sacramento Data File: **Injection Date:** 23-Jul-2017 13:17:02 Instrument ID: A8_N Lims ID: IC L2 Full Client ID: Operator ID: SACINSTLCMS01 ALS Bottle#: 29 Worklist Smp#: 4 Injection Vol: 2.0 ul Dil. Factor: 1.0000 Method: Limit Group: LC PFC_DOD ICAL $A8_N$ D 113C4 PFBA 2 Perfluorobutyric acid D 313C5-PFPeA Exp1:m/z 217.00 > 172.00:Moving5PtAverage_x Exp1:m/z 212.90 > 169.00:Moving5PtAverage_x Exp1:m/z 267.90 > 223.00:Moving5PtAverage_x 28 77 (00001X30 X30 (000024 X) 066 ×55 . 16 -24 **≻**44 18 33 12 22 11 1.3 1.9 1.3 1.1 1.4 1.7 2.0 1.0 1.6 1.6 1.9 2.2 2.5 5 Perfluorobutanesulfonic acid 5 Perfluorobutanesulfonic acid 4 Perfluoropentanoic acid Exp1:m/z 262.90 > 219.00:Moving5PtAverage_x 64**-1** Exp1:m/z 298.90 > 80.00:Moving5PtAverage_x3 Exp1:m/z 298.90 > 99.00:Moving5PtAverage x3 42 ©56**-**(36-030-30-878- ∑65 _ ≻52 18 24 12 26 16 13 1.5 1.8 2.1 2.0 2.3 2.1 2.4 1.4 1.2 1.5 1.8 2.7 1.1 61 Sodium 1H,1H,2H,2H-perfluorohexan@ Perfluorohexanoic acid 7 13C2 PFHxA Exp1:m/z 313.00 > 269.00:Moving5PtAverage_ Exp1:m/z 327.00 > 307.00:Moving5PtAverage_x Exp1:m/z 315.00 > 270.00:Moving5PtAverage_x (00001 00020 21 6⁴² 8 8 8 0018-15-<u>≻</u>16• C₂₈ 1.9 2.2 2.8 1.8 2.1 2.7 1.5 1.8 2.1 2.7 1.6 2.5 1.5 2.4 1.2 2.4 1.3 9 13C4-PFHpA 10 Perfluoroheptanoic acid D 11 1802 PFHxS Exp1:m/z 403.00 > 84.00:Moving5PtAverage_x3 Exp1:m/z 367.00 > 322.00:Moving5PtAverage_x Exp1:m/z 363.00 > 319.00:Moving5PtAverage_> (018 to 000 15 to 0000 15 to 000 15 ©28-0024-<u>6</u>30 \sum_{12} 16 18 12 0 0 0 2.0 2.3 2.6 2.9 3.2 1.9 Page 67/9 of 1104 2.8 2.1 2.4 2.7 3.0 1.7 1.8

3.4

3.7

2.4

2.7

3.0

3.3

3.9

3.6

11

2.5

2.8

0

1.8

2.4

3.0

3.6

4.2

Chrom Revision: 2.2 26-Jun-2017 08:09:44

Report Date: 24-Jul-2017 11:24:32

Chrom Revision: 2.2 26-Jun-2017 08:09:44

Report Date: 24-Jul-2017 11:24:32

Report Date: 24-Jul-2017 11:24:32 Chrom Revision: 2.2 26-Jun-2017 08:09:44 Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170723-45765.b\2017.07.23ICAL_004.d

45 Perfluorohexadecanoic acid D 44 13C2-PFHxDA 46 Perfluorooctadecanoic acid Exp1:m/z 913.00 > 869.00:Moving5PtAverage_x Exp1:m/z 815.00 > 770.00:Moving5PtAverage_x 967 Exp1:m/z 813.00 > 769.00:Moving5PtAverage_x 78 5.480 (00012 X) X) 8 (00072 ×60 067-000156-× 45->₄₈-34 36 23 24 12 12 0 0 4.7 5.0 5.3 5.6 4.9 5.2 5.5 5.1 5.4 5.7 4.4 4.6

Report Date: 24-Jul-2017 11:24:35 Chrom Revision: 2.2 26-Jun-2017 08:09:44

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170723-45765.b\2017.07.23ICAL_005.d

Lims ID: IC L3 Full

Client ID:

Sample Type: IC Calib Level: 3

Inject. Date: 23-Jul-2017 13:23:55 ALS Bottle#: 30 Worklist Smp#: 5

Injection Vol: 2.0 ul Dil. Factor: 1.0000

Sample Info: L3-FULL

Misc. Info.: Plate: 1 Rack: 1

Operator ID: SACINSTLCMS01 Instrument ID: A8_N

Sublist: chrom-A8_N*sub19

Method: \ChromNa\Sacramento\ChromData\A8_N\20170723-45765.b\A8_N.m

Limit Group: LC PFC_DOD ICAL

Last Update: 24-Jul-2017 11:24:35 Calib Date: 23-Jul-2017 13:58:26

Integrator: Picker

Quant Method: Isotopic Dilution Quant By: Initial Calibration

Last ICal File: \ChromNA\Sacramento\ChromData\A8_N\20170723-45765.b\2017.07.23ICAL_010.d

Column 1: Det: EXP1

Process Host: XAWRK004

First Level Reviewer: phomsophat Date: 23-Jul-2017 14:56:08

FIRST Level Revie	wer: pnc	omsopna	It		Date:		23-Jul-2017 14:56:08	3		
Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 113C4 PFBA		1.550	0.005		770 4704	40.5		00.0	47040	
217.00 > 172.00 2 Perfluorobut		1.558	0.005		7724731	49.5		99.0	47248	
212.90 > 169.00	,		-0.001	1.000	749523	5.50		110	432	
D 3 13C5-PFPe 267.90 > 223.00		1.780	0.002		5745028	52.0		104	79763	
4 Perfluoroper			0.002		3743020	32.0		104	19103	
262.90 > 219.00		1.783	-0.001	1.000	596471	4.98		99.6	407	
D 47 13C3-PFB 301.90 > 83.00		1.806	0.003		138064	NC			6289	
5 Perfluorobut			0.003		130004	NC			0209	
298.90 > 80.00	1.809	1.808	0.001	1.000	990268	4.79		108	667	
	1.809	1.808	0.001	1.000	394074		2.51(0.00-0.00)	108	628	
61 Sodium 1H, 327.00 > 307.00		2.026	0.003	1.000	227509	4.99		107	15208	
D 7 13C2 PFHx										
315.00 > 270.00 6 Perfluorohex		2.070	0.004		5205527	51.5		103	46740	
313.00 > 269.00		2.070	0.004	1.000	510606	5.15		103	1794	
10 Perfluorohe	•									
363.00 > 319.00 D 9 13C4-PFH _k		2.420	0.001	1.000	453995	4.91		98.2	1739	
367.00 > 322.00		2.420	0.001		4502179	53.7		107	34286	
8 Perfluorohex										M
399.00 > 80.00 D 11 1802 PFH		2.436	0.001	1.000	662781	4.41		96.9	1275	M
	2.437	2.436	0.001		6569473	47.8		101	43521	
					Page 684 of 1	104				

 Report Date: 24-Jul-2017 11:24:35
 Chrom Revision: 2.2 26-Jun-2017 08:09:44

 Data File:
 \\ChromNa\Sacramento\ChromData\A8_N\20170723-45765.b\2017.07.23ICAL_005.d

Data File:	\\Cnrc	miva	acrament	:o\Cnrom	Data\A8_N\201	/0/23-45/6	5.D\2017.07.23ICA	005.a		
Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
* 62 13C2-PFOA	4									
415.00 > 370.00		2.740	0.050		4054382	50.0			28615	
D 12 M2-6:2FTS 429.00 > 409.00		2 766	0.002		2227990	46.8		98.6	29995	
13 Sodium 1H,				e	2221770	40.0		70.0	27773	
427.00 > 407.00				1.000	208291	4.96		105	7911	
D 14 13C4 PFO										
417.00 > 372.00			0.004		4232863	51.5		103	33237	
15 Perfluorooct 413.00 > 369.00		2.794	0.003	1.000	454115	5.03		101	108	
413.00 > 169.00		2.794	0.003	1.000	270696	0.00	1.68(0.90-1.10)	101	3023	
16 Perfluorohe			id							
449.00 > 80.00		2.801	0.004	1.000	604887	4.98		105	16599	
17 Perfluorooct 499.00 > 80.00		onic acio 3.176	d 0.003	1.000	547466	4.78		103	6062	
499.00 > 80.00 499.00 > 99.00		3.176	0.003	1.000	114193	4.70	4.79(0.90-1.10)	103	1293	
D 18 13C4 PFO	S						,			
503.00 > 80.00	3.179	3.176	0.003		5180018	47.9		100	22902	
20 Perfluoronoi			0.007	4 000	0.40400	E 40		404	4.407	
463.00 > 419.00		3.180	0.006	1.000	368688	5.19		104	1497	
D 19 13C5 PFN/ 468.00 > 423.00		3.180	0.006		3490997	53.1		106	20823	
D 21 13C8 FOS		000	0.000		0.70777	33			20020	
506.00 > 78.00		3.505	0.003		9138842	50.0		100.0	13023	
22 Perfluorooct										
498.00 > 78.00		3.508	0.0	1.000	875387	5.31		106	10808	
D 26 M2-8:2FTS 529.00 > 509.00		3 528	0.009		1748653	47.9		100	21934	
25 Sodium 1H,				ne	1740033	77.7		100	21754	
527.00 > 507.00		3.528	0.009	1.000	169963	5.11		107	7267	
D 23 13C2 PFD/										
515.00 > 470.00		3.539	0.008		2973174	53.2		106	9392	
24 Perfluorodeo 513.00 > 469.00		cid 3.542	0.005	1.000	289035	4.96		99.2	1493	
D 27 d3-NMeFO		3.342	0.005	1.000	289033	4.90		99.2	1473	
573.00 > 419.00		3.698	0.008		1090209	50.2		100	11508	
28 N-methyl pe	rfluorood	ctane su	lfonami							
570.00 > 419.00	3.706	3.701	0.005	1.000	97239	4.90		98.0	4106	
29 Perfluorodeo				1 000	225.440	4.07		100	7005	
599.00 > 80.00		3.855	0.010	1.000	335448	4.97		103	7995	
D 32 d5-NEtFOS 589.00 > 419.00		3.866	0.008		1136911	51.8		104	3534	
D 30 13C2 PFUr		0.000	0.000		1100711	01.0			0001	
565.00 > 520.00		3.875	0.007		2159853	53.0		106	11782	
31 Perfluoround										
563.00 > 519.00		3.875	0.007	1.000	233311	5.16		103	737	
33 N-ethyl perfl				1 002	07401	E OF		101	ე ე1⊑	
584.00 > 419.00	ა.ԾԾ∠	3.875	0.007	1.002	Page 685 of 1	104 ^{5.05}		101	2315	

Report Date: 24-Jul-2017 11:24:35 Chrom Revision: 2.2 26-Jun-2017 08:09:44 Data File: \\ChromNa\Sacramento\ChromData\A8 N\20170723-45765.b\2017.07.23ICAL 005.d

Data File:	NChr	miva\Sa	acrament	OCHROM	Data(A8_N\201	10123-4576	5.D\2017.07.23ICAL	005.0		
Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
Signal	ΚI	KI	KI	KI	Response	Tig/IIII	Ratio(Littits)	70 KeC	3/11	Flays
D 34 d-N-MeFO	SA-M									
515.00 > 169.00	3.989	3.986	0.003		2296036	48.7		97.5	790	
35 MeFOSA										
512.00 > 169.00	3.996	3.992	0.004	1.000	214053	5.08		102	3821	
37 Perfluorodo	decanoio	c acid								
613.00 > 569.00	4.178	4.168	0.010	1.000	212214	5.03		101	59.0	
D 36 13C2 PFD	ρA									
615.00 > 570.00	4.178	4.169	0.009		2268225	50.8		102	6089	
D 38 d-N-EtFOS	A-M									
531.00 > 169.00	4.178	4.173	0.005		2400939	49.2		98.3	5607	
39 N-ethylperflu	uoro-1-o	ctanesul	fonami							
526.00 > 169.00	4.186	4.178	0.008	1.000	221116	4.97		99.3	3666	
41 Perfluorotrid	lecanoic	acid								
663.00 > 619.00	4.443	4.434	0.009	1.000	201160	5.21		104	71.2	
D 43 13C2-PFT6	eDA									
715.00 > 670.00	4.689	4.676	0.013		4237183	52.2		104	19971	
42 Perfluorotetr	radecan	oic acid								
712.50 > 668.90	4.689	4.676	0.013	1.000	468872	5.38		108	40.8	
713.00 > 169.00	4.679	4.676	0.003	0.998	51226		9.15(0.00-0.00)	108	969	
D 44 13C2-PFH	xDA									
815.00 > 770.00	5.106	5.091	0.015		2088906	50.6		101	4403	
45 Perfluorohe	xadecan	oic acid								
813.00 > 769.00	5.106	5.092	0.014	1.000	206894	5.09		102	45.8	
46 Perfluorooct	adecano	oic acid								
913.00 > 869.00	5.469	5.458	0.011	1.000	167649	4.83		96.6	75.6	

QC Flag Legend Processing Flags

NC - Not Calibrated

Review Flags

M - Manually Integrated

Reagents:

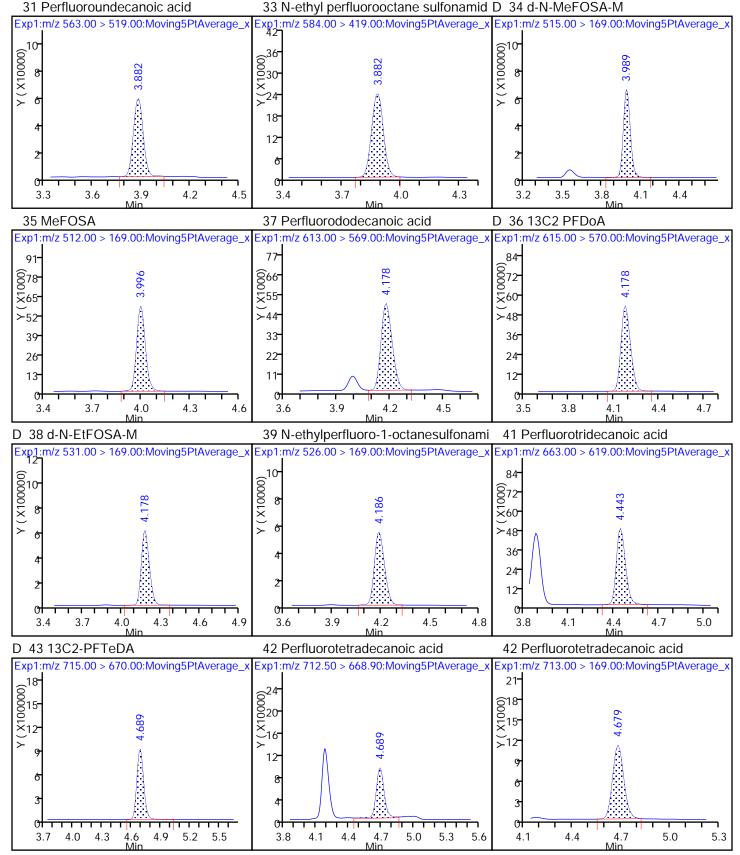
LCPFC_FULL-L3_00005 Amount Added: 1.00 Units: mL

Report Date: 24-Jul-2017 11:24:35 Chrom Revision: 2.2 26-Jun-2017 08:09:44 TestAmerica Sacramento Data File: \\ChromNa\\Sacramento\\ChromData\\A8_N\\20170723-45765.b\\2017.07.23ICAL_005.d **Injection Date:** 23-Jul-2017 13:23:55 Instrument ID: A8_N Lims ID: IC L3 Full Client ID: Operator ID: SACINSTLCMS01 ALS Bottle#: 30 Worklist Smp#: 5 Injection Vol: 2.0 ul Dil. Factor: 1.0000 Method: Limit Group: LC PFC_DOD ICAL $A8_N$ D 113C4 PFBA 2 Perfluorobutyric acid D 313C5-PFPeA Exp1:m/z 217.00 > 172.00:Moving5PtAverage_x Exp1:m/z 212.90 > 169.00:Moving5PtAverage_x Exp1:m/z 267.90 > 223.00:Moving5PtAverage_x 28 ©35-030-0024 0001 20 ©36 0 0 30 $\stackrel{\smile}{\times}_{25}$. 16 18 12 15 12 10 1.0 1.6 1.9 1.3 1.9 2.2 1.0 1.3 1.6 1.3 1.6 1.9 2.2 2.5 5 Perfluorobutanesulfonic acid 4 Perfluoropentanoic acid 5 Perfluorobutanesulfonic acid Exp1:m/z 298.90 > 80.00:Moving5PtAverage_x3 Exp1:m/z 298.90 > 99.00:Moving5PtAverage x3 Exp1:m/z 262.90 > 219.00:Moving5PtAverage_x 21 ©24 0018 15-15-∑20 ×30 12 18 12 1.8 2.1 2.4 1.5 1.8 2.1 2.4 1.3 1.5 1.2 1.0 1.6 1.9 2.2 2.5 61 Sodium 1H,1H,2H,2H-perfluorohexaDe 7 13C2 PFHxA 6 Perfluorohexanoic acid Exp1:m/z 313.00 > 269.00:Moving5PtAverage_> V (X10000) 24 (000020 ×16 ©20-×16-12 12 1.8 2.1 1.9 2.2 1.9 2.2 1.5 2.4 2.7 1.6 2.5 2.8 1.6 2.5 2.8 1.3 1.3 8 Perfluorohexanesulfonic acid (M) 10 Perfluoroheptanoic acid 9 13C4-PFHpA Exp1:m/z 363.00 > 319.00:Moving5PtAverage_> Exp1:m/z 367.00 > 322.00:Moving5PtAverage_x Exp1:m/z 399.00 > 80.00:Moving5PtAverage_x3 24 000015-X (000015 X) 12 0020 20 ×16 12 0 0| 1.9 2.2 2.5 2.8 1.7 2.9 1.9 2.2 2.5 2.8 3.1 2.0 Page 68 7 rof 1104 1.6

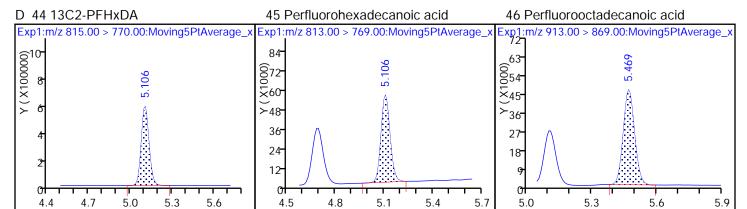
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170723-45765.b\2017.07.23ICAL_005.d

Chrom Revision: 2.2 26-Jun-2017 08:09:44

Chrom Revision: 2.2 26-Jun-2017 08:09:44



Report Date: 24-Jul-2017 11:24:35 Chrom Revision: 2.2 26-Jun-2017 08:09:44 Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170723-45765.b\2017.07.23ICAL_005.d



Report Date: 24-Jul-2017 11:24:35 Chrom Revision: 2.2 26-Jun-2017 08:09:44 Manual Integration/User Assign Peak Report

TestAmerica Sacramento

Data File: \ChromNa\Sacramento\ChromData\A8_N\20170723-45765.b\2017.07.23ICAL_005.d

Injection Date: 23-Jul-2017 13:23:55 Instrument ID: A8_N

Lims ID: IC L3 Full

Client ID:

Operator ID: SACINSTLCMS01 ALS Bottle#: 30 Worklist Smp#: 5

Injection Vol: 2.0 ul Dil. Factor: 1.0000

Method: A8_N Limit Group: LC PFC_DOD ICAL

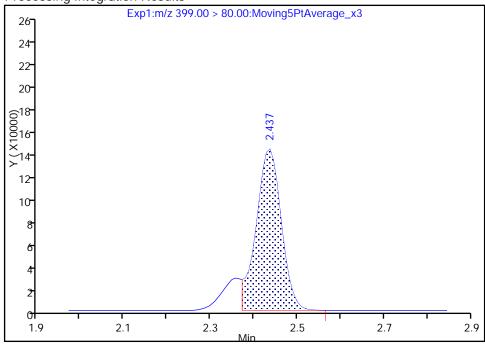
Column: Detector EXP1

8 Perfluorohexanesulfonic acid, CAS: 355-46-4

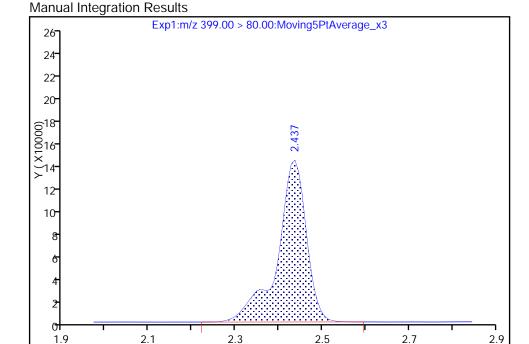
Signal: 1

RT: 2.44
Area: 571028
Amount: 4.276064
Amount Units: ng/ml

Processing Integration Results



RT: 2.44
Area: 662781
Amount: 4.410791
Amount Units: ng/ml



Reviewer: phomsophat, 23-Jul-2017 15:01:56

Audit Action: Manually Integrated

Audit Reason: Assign Peak

Page 692 of 1104

Report Date: 24-Jul-2017 11:24:39 Chrom Revision: 2.2 26-Jun-2017 08:09:44

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170723-45765.b\2017.07.23ICAL_006.d

Lims ID: IC L4 Full

Client ID:

Sample Type: IC Calib Level: 4

Inject. Date: 23-Jul-2017 13:30:50 ALS Bottle#: 31 Worklist Smp#: 6

Injection Vol: 2.0 ul Dil. Factor: 1.0000

Sample Info: L4-FULL

Misc. Info.: Plate: 1 Rack: 1

Operator ID: SACINSTLCMS01 Instrument ID: A8_N

Sublist: chrom-A8_N*sub19

Method: \ChromNa\Sacramento\ChromData\A8_N\20170723-45765.b\A8_N.m

Limit Group: LC PFC_DOD ICAL

Last Update: 24-Jul-2017 11:24:39 Calib Date: 23-Jul-2017 13:58:26

Integrator: Picker

Quant Method: Isotopic Dilution Quant By: Initial Calibration

Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20170723-45765.b\2017.07.23ICAL_010.d

Column 1: Det: EXP1

Process Host: XAWRK004

First Level Reviewer: phomsophat Date: 23-Jul-2017 15:03:02

First Level Revie	wer: pho	msopha	<u>it</u>		Date:	2	:3-Jul-2017 15:03:02			
Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 113C4 PFBA	4									
217.00 > 172.00	1.554	1.558	-0.004		8240620	52.8		106	47805	
2 Perfluorobut	•	1 5/4	0.010	1 000	2020741	20.0		105	1700	
212.90 > 169.00 D 3 13C5-PFP6		1.564	-0.010	1.000	3038741	20.9		105	1790	
267.90 > 223.00		1.780	-0.007		5749559	52.0		104	75658	
4 Perfluoroper	ntanoic a	cid								
262.90 > 219.00		1.783	-0.010	1.000	2299701	19.2		96.0	1590	
D 47 13C3-PFB 301.90 > 83.00	S 1.801	1 206	-0.005		136675	NC			5272	
5 Perfluorobut			-0.003		130073	NC			3272	
298.90 > 80.00	1.801	1.808	-0.007	1.000	3988481	18.9		107	2591	
	1.801	1.808	-0.007	1.000	1530271		2.61(0.00-0.00)	107	2364	
61 Sodium 1H, 327.00 > 307.00		H-perflu 2.026		ne 1.000	865853	18.2		97.5	43007	
6 Perfluorohex			-0.006	1.000	000000	10.2		97.3	43007	
313.00 > 269.00			-0.007	1.000	1995591	19.9		99.6	6853	
D 7 13C2 PFHx										
315.00 > 270.00		2.070	-0.007		5262198	52.0		104	45723	
D 9 13C4-PFH _p 367.00 > 322.00		2.420	-0.004		4306431	51.4		103	34222	
10 Perfluorohe			-0.004		4300431	31.4		103	J7222	
363.00 > 319.00	•	2.420	-0.004	1.000	1717995	19.4		97.2	7202	
D 11 18O2 PFH										
403.00 > 84.00			-0.004		6720545	48.9		103	35152	
8 Perfluorohex 399.00 > 80.00			-0.004	1.000	2654948	17.3		94.9	2425	M M
377.00 / 00.00	2. 102	2.750	0.007	1.000	2001710	17.5		, . , ,	2120	. v i

Report Date: 24-Jul-2017 11:24:39 Chrom Revision: 2.2 26-Jun-2017 08:09:44

Data File:

Data File.	1101110		·	.0101110111	Data (7 to_11120 1	70720 1070	5.b(2017.07.251CAL	000.a		
Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
* 62 13C2-PFOA 415.00 > 370.00		2.740	0.045		4540955	50.0			40389	
13 Sodium 1H, 427.00 > 407.00		-			845572	19.3		102	24347	
D 12 M2-6:2FTS 429.00 > 409.00		2.766	-0.002		2324738	48.9		103	30462	
D 14 13C4 PFO 417.00 > 372.00		2.793	-0.008		4524447	55.1		110	31557	
15 Perfluorooct 413.00 > 369.00 413.00 > 169.00	2.785	2.794	-0.009 -0.009	1.000 1.000	2007679 1173150	20.8	1.71(0.90-1.10)	104 104	442 9149	
16 Perfluorohe 449.00 > 80.00	2.793		id -0.008	1.000	2397725	20.2		106	33993	
D 18 13C4 PFOS 503.00 > 80.00	3.170	3.176			5053172	46.7		97.7	19596	
17 Perfluorooct 499.00 > 80.00 499.00 > 99.00	3.170		-0.006	1.000 1.000	2093353 422020	18.7	4.96(0.90-1.10)	101 101	74899 3686	
D 19 13C5 PFN/ 468.00 > 423.00		3.180	-0.010		3245282	49.4		98.7	19765	
20 Perfluoronoi 463.00 > 419.00			-0.010	1.000	1351075	20.4		102	5182	
D 21 13C8 FOS		3.505	-0.006		9219278	50.4		101	12244	
22 Perfluorooct 498.00 > 78.00		fonamide 3.508		1.000	3422187	20.6		103	11766	
25 Sodium 1H, 527.00 > 507.00		-		ne 1.000	630739	18.8		98.1	14979	
D 26 M2-8:2FTS 529.00 > 509.00	3.517	3.528	-0.011		1765647	48.4		101	19125	
D 23 13C2 PFD/ 515.00 > 470.00	3.527		-0.012		2858875	51.2		102	8179	
24 Perfluorodeo 513.00 > 469.00	3.537		-0.005	1.000	1110082	19.8		99.1	4720	
D 27 d3-NMeFO 573.00 > 419.00	3.685		-0.013		1065558	49.0		98.1	8225	
28 N-methyl pe 570.00 > 419.00	3.695	3.701	-0.006	1.003	395381	20.4		102	9226	
29 Perfluorodeo 599.00 > 80.00	3.846		-0.009	1.000	1294446	19.7		102	12135	
D 32 d5-NEtFOS 589.00 > 419.00	3.855	3.866			1132733	51.6		103	3491	
33 N-ethyl perfl 584.00 > 419.00	3.864	3.875		1.002	380509	19.8		98.9	6354	
31 Perfluoround 563.00 > 519.00	3.864	acid 3.875	-0.011	1.000	836437	20.0		99.9	2028	
D 30 13C2 PFUt 565.00 > 520.00		3.875	-0.011		Page 694 of 1	104 ^{49.9}		99.7	8924	

Report Date: 24-Jul-2017 11:24:39 Chrom Revision: 2.2 26-Jun-2017 08:09:44 Data File: \\ChromNa\Sacramento\ChromData\A8 N\20170723-45765.b\2017.07.23ICAL 006.d

Data File:	\\Cnrc	miva\Sa	acrament	o\Cnrom	iData\A8_N\201	70723-4576	5.D\2017.07.23ICAL	006.a		
Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 34 d-N-MeFO	C A M									
515.00 > 169.00		3.986	-0.009		2308671	49.0		98.0	770	
	3.711	3.700	-0.007		2300071	47.0		70.0	770	
35 MeFOSA 512.00 > 169.00	2 005	3.992	0.007	1.000	826400	19.5		97.4	5858	
			-0.007	1.000	820400	19.5		97.4	2020	
37 Perfluorodo			0.011	1 000	0/7750	20.5		100	272	
613.00 > 569.00		4.168	-0.011	1.000	867758	20.5		102	273	
D 36 13C2 PFD		4.170	0.010		0070770	F4 4		100	(100	
615.00 > 570.00		4.169	-0.012		2279772	51.1		102	6123	
D 38 d-N-EtFOS					0.407.4.44	40.7		00.4	5000	
531.00 > 169.00			-0.008		2426441	49.7		99.4	5388	
39 N-ethylperflu										
526.00 > 169.00		4.178	-0.004	1.000	906622	20.1		101	5294	
41 Perfluorotrio										
663.00 > 619.00	4.422	4.434	-0.012	1.000	784927	20.2		101	271	
42 Perfluoroteti	radecan	oic acid								
712.50 > 668.90		4.676	-0.013	1.000	1714163	19.6		97.8	165	
713.00 > 169.00	4.652	4.676	-0.024	0.998	207837		8.25(0.00-0.00)	97.8	2862	
D 43 13C2-PFT	eDA									
715.00 > 670.00	4.663	4.676	-0.013		3931018	48.4		96.8	19891	
D 44 13C2-PFH	xDA									
815.00 > 770.00	5.079	5.091	-0.012		2169354	52.5		105	6034	
45 Perfluorohe	xadecan	oic acid								
813.00 > 769.00	5.087	5.092	-0.005	1.000	726480	19.5		97.3	152	
46 Perfluorooct	adecano	oic acid								
913.00 > 869.00			-0.009	1.000	655993	18.8		94.0	274	

QC Flag Legend Processing Flags

NC - Not Calibrated

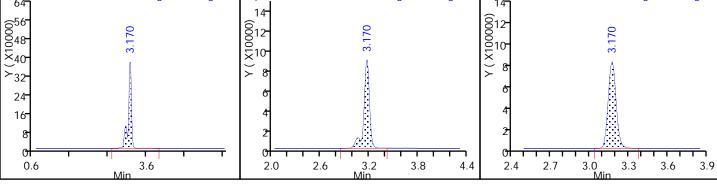
Review Flags

M - Manually Integrated

Reagents:

LCPFC_FULL-L4_00008 Amount Added: 1.00 Units: mL

Report Date: 24-Jul-2017 11:24:39 Chrom Revision: 2.2 26-Jun-2017 08:09:44 TestAmerica Sacramento Data File: \\ChromNa\\Sacramento\\ChromData\\A8_N\\20170723-45765.b\\2017.07.23ICAL_006.d **Injection Date:** 23-Jul-2017 13:30:50 Instrument ID: A8_N Lims ID: IC L4 Full Client ID: Operator ID: SACINSTLCMS01 ALS Bottle#: 31 Worklist Smp#: Injection Vol: 2.0 ul Dil. Factor: 1.0000 Method: Limit Group: LC PFC_DOD ICAL $A8_N$ D 113C4 PFBA 2 Perfluorobutyric acid D 313C5-PFPeA Exp1:m/z 212.90 > 169.00:Moving5PtAverage_x | Exp1:m/z 267.90 > 223.00:Moving5PtAverage_x Exp1:m/z 217.00 > 172.00:Moving5PtAverage_> 28 642 00036 0014 00012 (000024 X) ∑30 ∑₁₀ . 16 12 18 12 1.1 1.4 1.7 2.0 2.3 0.8 1.1 1.4 2.0 0.9 1.2 1.5 1.8 5 Perfluorobutanesulfonic acid 5 Perfluorobutanesulfonic acid 4 Perfluoropentanoic acid Exp1:m/z 262.90 > 219.00:Moving5PtAverage_x Exp1:m/z 298.90 > 80.00:Moving5PtAverage x3 Exp1:m/z 298.90 > 99.00:Moving5PtAverage_x3 721 (12¹ (0000010¹ (12¹ (12 618-00015-63 654 27 18 1.9 2.2 2.5 1.4 2.0 2.3 2.0 2.3 1.0 1.3 1.1 1.4 1.1 61 Sodium 1H,1H,2H,2H-perfluorohexan& Perfluorohexanoic acid 7 13C2 PFHxA Exp1:m/z 313.00 > 269.00:Moving5PtAverage_> Exp1:m/z 327.00 > 307.00:Moving5PtAverage_x Exp1:m/z 315.00 > 270.00:Moving5PtAverage_x (00001 00020 642 0036 684**-**672- \approx 30 <u>≻</u>16• \times 60 ≻₄₈-18 36 12 24 12 2.2 1.5 1.8 2.1 1.5 1.8 2.1 2.7 1.0 1.6 2.8 2.4 2.7 2.4 1.2 9 13C4-PFHpA 10 Perfluoroheptanoic acid D 11 1802 PFHxS Exp1:m/z 403.00 > 84.00:Moving5PtAverage_x3 Exp1:m/z 363.00 > 319.00:Moving5PtAverage_ Exp1:m/z 367.00 > 322.00:Moving5PtAverage_x (0000015 X12 (70-(060-030 025 ×50 **≻**40 15 30 10 20 10 0 0 2.0 2.3 2.6 2.9 3.2 2.0 2.3 2.6 2.9 1.7 1.6 1.7



3.8

4.1

4.4

3.2

3.5

3.8

4.1

4.4

3.2

3.5

3.8

4.1

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3.2

3.5

Chrom Revision: 2.2 26-Jun-2017 08:09:44

Report Date: 24-Jul-2017 11:24:39 Chrom Revision: 2.2 26-Jun-2017 08:09:44 Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170723-45765.b\2017.07.23ICAL_006.d

46 Perfluorooctadecanoic acid D 44 13C2-PFHxDA 45 Perfluorohexadecanoic acid Exp1:m/z 813.00 > 769.00:Moving5PtAverage_x Exp1:m/z 815.00 > 770.00:Moving5PtAverage_x 28 91⁻ (00001X) (00001X) 6028 0024 0024 20 × 16 ≻52- ≻₁₆-12 39 12 26 8 13 0 0 0 4.7 5.0 5.3 5.6 4.5 4.8 5.1 5.4 5.7 4.9 5.2 5.5 5.8 4.4

Report Date: 24-Jul-2017 11:24:39 Chrom Revision: 2.2 26-Jun-2017 08:09:44 Manual Integration/User Assign Peak Report

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170723-45765.b\2017.07.23ICAL_006.d

Injection Date: 23-Jul-2017 13:30:50 Instrument ID: A8_N

Lims ID: IC L4 Full

Client ID:

Operator ID: SACINSTLCMS01 ALS Bottle#: 31 Worklist Smp#: 6

Injection Vol: 2.0 ul Dil. Factor: 1.0000

Method: A8_N Limit Group: LC PFC_DOD ICAL

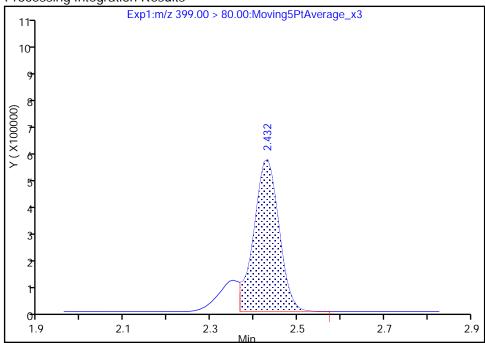
Column: Detector EXP1

8 Perfluorohexanesulfonic acid, CAS: 355-46-4

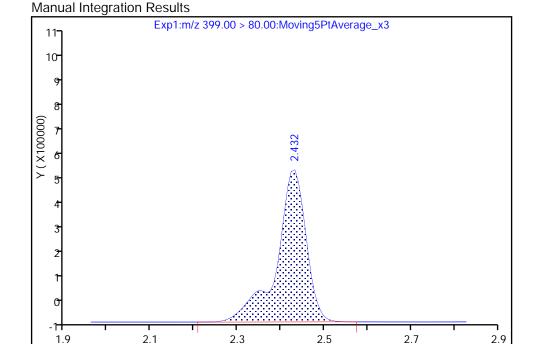
Signal: 1

RT: 2.43
Area: 2265162
Amount: 16.173991
Amount Units: ng/ml

Processing Integration Results



RT: 2.43
Area: 2654948
Amount: 17.271436
Amount Units: ng/ml



Reviewer: phomsophat, 23-Jul-2017 15:02:47

Audit Action: Manually Integrated

Audit Reason: Assign Peak

Page 701 of 1104

Report Date: 24-Jul-2017 11:24:43 Chrom Revision: 2.2 26-Jun-2017 08:09:44

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170723-45765.b\2017.07.23ICAL_007.d

Lims ID: IC L5 Full

Client ID:

Sample Type: IC Calib Level: 5

Inject. Date: 23-Jul-2017 13:37:44 ALS Bottle#: 32 Worklist Smp#: 7

Injection Vol: 2.0 ul Dil. Factor: 1.0000

Sample Info: L5-FULL

Misc. Info.: Plate: 1 Rack: 1

Operator ID: SACINSTLCMS01 Instrument ID: A8_N

Sublist: chrom-A8_N*sub19

Method: \ChromNa\Sacramento\ChromData\A8_N\20170723-45765.b\A8_N.m

Limit Group: LC PFC_DOD ICAL

Last Update: 24-Jul-2017 11:24:42 Calib Date: 23-Jul-2017 13:58:26

Integrator: Picker

Quant Method: Isotopic Dilution Quant By: Initial Calibration

Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20170723-45765.b\2017.07.23ICAL_010.d

Column 1: Det: EXP1

Process Host: XAWRK004

First Level Reviewer: phomsophat Date: 23-Jul-2017 15:03:30

First Level Revie	wer. pric	лизорна	11		Date.		23-Jul-2017 13.03.30			
Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 113C4 PFBA	1									
217.00 > 172.00		1.558	-0.003		7884062	50.5		101	41182	
2 Perfluorobut	yric acid									
212.90 > 169.00	1.565	1.564	0.001	1.000	6963312	50.1		100	3830	
D 3 13C5-PFP6										
267.90 > 223.00		1.780	-0.006		5668374	51.3		103	69487	
4 Perfluoroper			0.001	1 000	E4/4500	47.0		00.5	2701	
262.90 > 219.00		1.783	0.001	1.000	5464599	46.3		92.5	3701	
D 47 13C3-PFB 301.90 > 83.00		1.806	0.004		134754	NC			4423	
5 Perfluorobut			-0.004		134734	NC			4423	
298.90 > 80.00		1.808	-0.006	1.000	9206165	43.9		99.2	5529	
	1.802	1.808	-0.006	1.000	3733944		2.47(0.00-0.00)	99.2	5135	
61 Sodium 1H,	1H,2H,2	H-perflu	orohexar	ne						
327.00 > 307.00	2.020	2.026	-0.006	1.000	2141036	44.3		94.8	53420	
D 7 13C2 PFHx										
315.00 > 270.00	2.066	2.070	-0.004		5074168	50.2		100	42053	
6 Perfluorohex										
313.00 > 269.00		2.070	-0.004	1.000	4748124	49.1		98.3	10464	
10 Perfluorohe	•		0.005	1 000	411/140	47.0		04.1	0270	
363.00 > 319.00		2.420	-0.005	1.000	4116140	47.0		94.1	9360	
D 9 13C4-PFH _k 367.00 > 322.00		2.420	-0.005		4262989	50.9		102	35081	
8 Perfluorohe					4202707	30.7		102	33001	
399.00 > 80.00			-0.005	1.000	6455854	42.3		93.0	4896	
D 11 1802 PFH										
403.00 > 84.00		2.436	-0.005		6667053	48.5		103	40208	
					Dogo 702 of (1404				

 Report Date: 24-Jul-2017 11:24:43
 Chrom Revision: 2.2 26-Jun-2017 08:09:44

 Data File:
 \\ChromNa\Sacramento\ChromData\A8_N\20170723-45765.b\2017.07.23ICAL_007.d

Data File.	WOIIIC	ııııva\3c	ici ai nem	OCHION	Daia\A0_I\\201	10123-4370	3.b\2017.07.23ICA	L_007.u		
Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
* 62 13C2-PFOA 415.00 > 370.00		2.740	0.043		4190941	50.0			30572	
D 12 M2-6:2FTS 429.00 > 409.00		2.766	-0.005		2365496	49.7		105	41334	
13 Sodium 1H, 427.00 > 407.00		•		e 1.000	2050076	46.0		97.0	89011	
D 14 13C4 PFO 417.00 > 372.00		2.793	-0.003		4409764	53.7		107	31138	
15 Perfluorooct 413.00 > 369.00 413.00 > 169.00	2.790	id 2.794 2.794		1.000 1.000	4489705 2729143	47.7	1.65(0.90-1.10)	95.4 95.4	1084 10757	
16 Perfluorohe 449.00 > 80.00	2.790	2.801	-0.011	1.000	5765727	48.0		101	35622	
17 Perfluorooct 499.00 > 80.00 499.00 > 99.00	3.168		-0.008	1.000 1.000	5048139 1063282	44.6	4.75(0.90-1.10)	96.2 96.2	8169 9015	
D 18 13C4 PFOS 503.00 > 80.00		3.176	-0.008		5115538	47.3		98.9	20578	
20 Perfluoronoi 463.00 > 419.00		cid 3.180	-0.012	1.000	3227789	48.1		96.2	8615	
D 19 13C5 PFN/ 468.00 > 423.00		3.180	-0.012		3295100	50.1		100	25349	
D 21 13C8 FOSA 506.00 > 78.00		3.505	-0.010		9462080	51.8		104	19557	
22 Perfluorooct 498.00 > 78.00				1.000	8336711	48.8		97.7	19603	
D 26 M2-8:2FTS 529.00 > 509.00	3.515				1861315	51.0		106	27121	
25 Sodium 1H, 527.00 > 507.00	3.515	-		ne 1.000	1539793	43.5		90.8	22299	
D 23 13C2 PFD/ 515.00 > 470.00	3.526	3.539	-0.013		2822332	50.5		101	9113	
24 Perfluorodeo 513.00 > 469.00	3.526	3.542	-0.016	1.000	2585881	46.8		93.5	6184	
D 27 d3-NMeFO 573.00 > 419.00	3.691	3.698			1147829	52.8		106	7574	
28 N-methyl pe 570.00 > 419.00	3.691	3.701	-0.010	1.000	1039957	49.8		99.6	10288	
29 Perfluorodeo 599.00 > 80.00	3.845	3.855		1.000	3217983	48.3		100	10491	
D 32 d5-NEtFOS 589.00 > 419.00	3.854	3.866	-0.012		1055395	48.1		96.2	3721	
D 30 13C2 PFUr 565.00 > 520.00	3.864	3.875	-0.011		1922444	47.2		94.4	12708	
31 Perfluoround 563.00 > 519.00 33 N-ethyl perfl	3.864	3.875	-0.011	1.000	1958756	49.6		99.1	5557	
584.00 > 419.00				1.002	Page 703 of 1	104 ^{49.7}		99.4	9884	

Report Date: 24-Jul-2017 11:24:43 Chrom Revision: 2.2 26-Jun-2017 08:09:44

Data File:	\\Chrc	mNa\Sa	acrament	:o\Chrom	Data\A8_N\201	70723-4576	5.b\2017.07.23ICAL	007.d		
Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 34 d-N-MeFOS	SA-M									
515.00 > 169.00	3.984	3.986	-0.002		2390079	50.7		101	841	
35 MeFOSA 512.00 > 169.00	3 984	3 992	-0.008	1.000	2110821	48.1		96.2	7360	
37 Perfluorodo			-0.000	1.000	2110021	40.1		70.2	7300	
613.00 > 569.00			-0.008	1.000	2160889	53.4		107	766	
D 36 13C2 PFD	Ac									
615.00 > 570.00		4.169	-0.009		2178974	48.8		97.6	5444	
D 38 d-N-EtFOS 531.00 > 169.00		1172	0.005		2471592	50.6		101	5387	
39 N-ethylperflu					2471392	50.0		101	3307	
526.00 > 169.00				1.000	2258565	49.3		98.5	7407	
41 Perfluorotrid	lecanoic	acid								
663.00 > 619.00		4.434	-0.010	1.000	1827022	49.2		98.5	653	
D 43 13C2-PFT6		1/7/	0.015		41141/0	F0.7		101	10000	
715.00 > 670.00 42 Perfluorotetr			-0.015		4114168	50.7		101	19822	
712.50 > 668.90			-0.015	1.000	3772981	45.0		90.1	292	
713.00 > 169.00	4.661	4.676	-0.015	1.000	496979		7.59(0.00-0.00)	90.1	5521	
D 44 13C2-PFH)										
815.00 > 770.00		5.091			2047502	49.6		99.1	5290	
45 Perfluorohex 813.00 > 769.00		oic acid 5.092		1.000	1711676	48.9		97.9	324	
46 Perfluorooct			-0.011	1.000	1711070	70.7		71.7	J24	
913.00 > 869.00			-0.016	1.000	1598412	47.9		95.9	684	
OC Flag Lec	nend									

OC Flag Legend Processing Flags

NC - Not Calibrated

Reagents:

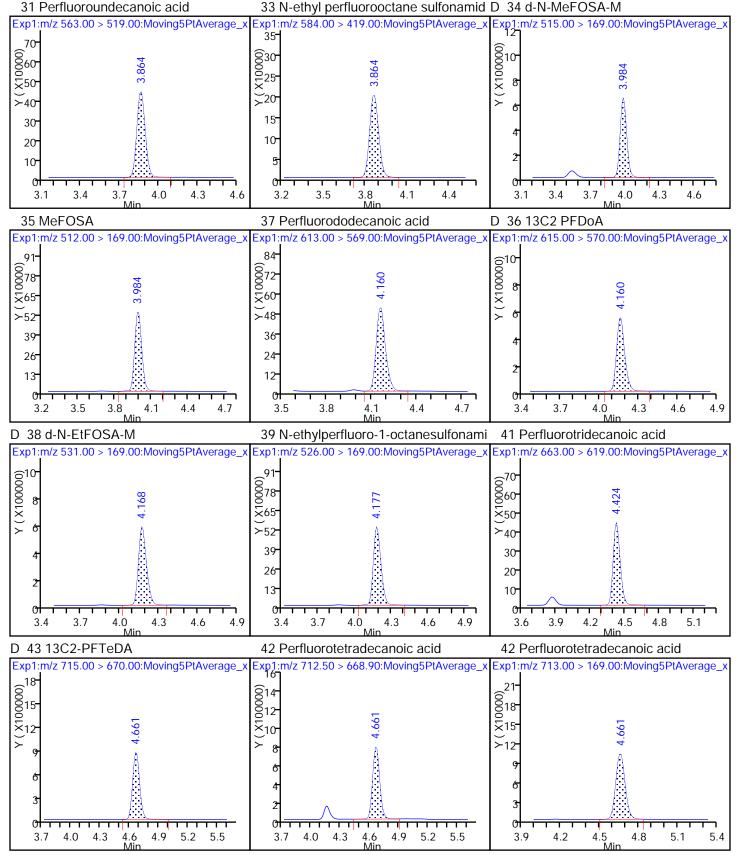
LCPFC_FULL-L5_00008 Amount Added: 1.00 Units: mL

Report Date: 24-Jul-2017 11:24:43 Chrom Revision: 2.2 26-Jun-2017 08:09:44 TestAmerica Sacramento Data File: **Injection Date:** 23-Jul-2017 13:37:44 Instrument ID: A8_N Lims ID: IC L5 Full Client ID: Operator ID: SACINSTLCMS01 ALS Bottle#: 32 Worklist Smp#: 7 Injection Vol: 2.0 ul Dil. Factor: 1.0000 Method: Limit Group: LC PFC_DOD ICAL $A8_N$ 2 Perfluorobutyric acid D 113C4 PFBA D 313C5-PFPeA Exp1:m/z 217.00 > 172.00:Moving5PtAverage_x Exp1:m/z 212.90 > 169.00:Moving5PtAverage_x Exp1:m/z 267.90 > 223.00:Moving5PtAverage_x (35⁻ (00030⁻ (25⁻ 28 ©36-0030-(000024 X) . 16 ∑20 18 15 12 10 1.2 1.1 1.4 1.7 2.0 0.9 1.8 2.1 1.0 1.3 1.6 2.5 5 Perfluorobutanesulfonic acid 5 Perfluorobutanesulfonic acid 4 Perfluoropentanoic acid Exp1:m/z 262.90 > 219.00:Moving5PtAverage_x Exp1:m/z 298.90 > 80.00:Moving5PtAverage_x3 Exp1:m/z 298.90 > 99.00:Moving5PtAverage x3 (0000015 (000015 (12-642 6036 00024 0020 ×30 18 12 2.4 1.5 1.8 2.0 2.3 2.0 1.2 2.1 1.1 1.4 1.1 1.4 2.3 61 Sodium 1H,1H,2H,2H-perfluorohexable 7 13C2 PFHxA 6 Perfluorohexanoic acid Exp1:m/z 327.00 > 307.00:Moving5PtAverage_x Exp1:m/z 315.00 > 270.00:Moving5PtAverage_x Exp1:m/z 313.00 > 269.00:Moving5PtAverage_x (21°00018° ×15° × (×100000) ©21**-**0218-×15 0 1.7 2.0 2.6 1.8 2.1 2.4 2.7 1.5 1.8 2.1 2.7 1.4 2.3 1.2 1.5 2.4 8 Perfluorohexanesulfonic acid 10 Perfluoroheptanoic acid D 9 13C4-PFHpA Exp1:m/z 363.00 > 319.00:Moving5PtAverage_x Exp1:m/z 367.00 > 322.00:Moving5PtAverage_x Exp1:m/z 399.00 > 80.00:Moving5PtAverage_x3 (0000015-X12 24 (018-100015-0 0 20 ×16 12 0 0 2.0 2.3 2.6 2.9 1.9 2.2 2.5 2.8 3.1 1.7 1.6 1.6

Chrom Revision: 2.2 26-Jun-2017 08:09:44

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170723-45765.b\2017.07.23ICAL_007.d D 19 13C5 PFNA D 21 13C8 FOSA 22 Perfluorooctane Sulfonamide Exp1:m/z 506.00 > 78.00:Moving5PtAverage_x3 Exp1:m/z 468.00 > 423.00:Moving5PtAverage_x Exp1:m/z 498.00 > 78.00:Moving5PtAverage_x3 (12 X) X (X100000) X) X 035 030 ©30 00 025 $\stackrel{\smile}{\succeq}_{20}$ ≻₂₀ 15 15 10 10 2.9 3.2 2.3 2.6 3.5 3.8 2.5 3.1 3.7 4.3 2.4 3.0 3.6 4.2 D 26 M2-8:2FTS 25 Sodium 1H,1H,2H,2H-perfluorodecabe23 13C2 PFDA Exp1:m/z 529.00 > 509.00:Moving5PtAverage_x Exp1:m/z 527.00 > 507.00:Moving5PtAverage_x Exp1:m/z 515.00 > 470.00:Moving5PtAverage_> 70 (000001X) 8 56 (0048- ×40-(060 X100050 -40 30 24 20 16 10 8 3.0 3.6 3.9 3.0 3.3 3.6 3.3 3.1 3.7 4.0 3.9 24 Perfluorodecanoic acid D 27 d3-NMeFOSAA 28 N-methyl perfluorooctane sulfonami Exp1:m/z 570.00 > 419.00:Moving5PtAverage_x Exp1:m/z 513.00 > 469.00:Moving5PtAverage_> Exp1:m/z 573.00 > 419.00:Moving5PtAverage_> (X100000) 8 % 6036 0036 (36-00030-X ×30 18 18 12 0 3.0 3.3 3.6 3.9 4.2 2.9 3.2 3.5 3.3 3.9 4.2 2.7 3.8 4.1 4.4 3.0 3.6 29 Perfluorodecane Sulfonic acid D 32 d5-NEtFOSAA D 30 13C2 PFUnA Exp1:m/z 599.00 > 80.00:Moving5PtAverage_x3 Exp1:m/z 589.00 > 419.00:Moving5PtAverage_x Exp1:m/z 565.00 > 520.00:Moving5PtAverage_x (0000012 (X10000012) (X10000012) 77 (36⁻ (30001×)24⁻ 0066 X 55 18 33 12 22 11 0 3.2 3.5 3.8 4.1 4.4 3.4 3.7 4.0 4.3 4.6 3.4 3.7 4.0 4.3 4.6 3.1 3.1

Chrom Revision: 2.2 26-Jun-2017 08:09:44



Report Date: 24-Jul-2017 11:24:43 Chrom Revision: 2.2 26-Jun-2017 08:09:44 Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170723-45765.b\2017.07.23ICAL_007.d

4.7

4.4

5.0

5.3

5.6

4.5

4.8

D 44 13C2-PFHxDA 45 Perfluorohexadecanoic acid 46 Perfluorooctadecanoic acid Exp1:m/z 815.00 > 770.00:Moving5PtAverage_x 967 Exp1:m/z 813.00 > 769.00:Moving5PtAverage_x Exp1:m/z 913.00 > 869.00:Moving5PtAverage_x 63 5.442 70 (00072 ×60 (0000 X50 00054 ×45 ×36 5.081 >₄₈--40 27 30 36 20 18 24 12 10 0 0 О

5.1

5.4

5.7

4.8

5.1

5.4

5.7

6.0

Report Date: 24-Jul-2017 11:24:46 Chrom Revision: 2.2 26-Jun-2017 08:09:44

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170723-45765.b\2017.07.23ICAL_008.d

Lims ID: IC L6 Full

Client ID:

Sample Type: IC Calib Level: 6

Inject. Date: 23-Jul-2017 13:44:37 ALS Bottle#: 33 Worklist Smp#: 8

Injection Vol: 2.0 ul Dil. Factor: 1.0000

Sample Info: L6-FULL

Misc. Info.: Plate: 1 Rack: 1

Operator ID: SACINSTLCMS01 Instrument ID: A8_N

Sublist: chrom-A8_N*sub19

Method: \ChromNa\Sacramento\ChromData\A8_N\20170723-45765.b\A8_N.m

Limit Group: LC PFC_DOD ICAL

Last Update: 24-Jul-2017 11:24:45 Calib Date: 23-Jul-2017 13:58:26

Integrator: Picker

Quant Method: Isotopic Dilution Quant By: Initial Calibration

Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20170723-45765.b\2017.07.23ICAL_010.d

Column 1: Det: EXP1

Process Host: XAWRK004

First Level Reviewer: phomsophat Date: 23-Jul-2017 15:04:18

First Level Revie	wei. pric	лизорна	ı t		Date.		23-Jul-2017 13.04.10)		
Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 1 13C4 PFBA	4									
217.00 > 172.00			-0.002		7747958	49.7		99.3	38647	
2 Perfluorobut 212.90 > 169.00	,	1.564	0.001	1.000	12000400	95.1		95.1	6104	
D 3 13C5-PFP6		1.304	0.001	1.000	12999409	95.1		95.1	0104	
267.90 > 223.00		1.780	0.004		5356421	48.5		97.0	56526	
4 Perfluoroper	ntanoic a	cid								
262.90 > 219.00	1.784	1.783	0.001	1.000	10886829	97.5		97.5	6702	
D 47 13C3-PFB										
301.90 > 83.00		1.806	-0.004		129076	NC			4899	
5 Perfluorobut 298.90 > 80.00		nic acid 1.808	0.005	1.000	16053252	79.3		89.7	7955	
	1.802	1.808	-0.006	0.994	7321311	77.0	2.19(0.00-0.00)	89.7	8438	
61 Sodium 1H,		•	orohexar	ne						
327.00 > 307.00			0.006	1.000	4075896	91.0		97.4	80674	
6 Perfluorohex 313.00 > 269.00			-0.004	1.000	0700454	96.8		96.8	17483	
D 7 13C2 PFHx		2.070	-0.004	1.000	8788456	90.8		90.8	17483	
315.00 > 270.00		2.070	-0.004		4765607	47.1		94.2	34981	
D 9 13C4-PFHp	ρΑ									
367.00 > 322.00	2.416	2.420	-0.004		4123520	49.2		98.4	26121	
10 Perfluorohe	•									
363.00 > 319.00		2.420	-0.004	1.000	7914021	93.5		93.5	14019	
D 11 18O2 PFH 403.00 > 84.00		2.436	-0 004		6433219	46.8		99.0	30183	
8 Perfluorohex					0400217	70.0		77.0	50100	M
399.00 > 80.00			-0.004	1.000	12621118	85.8		94.3	6805	M
					Dogg 710 of 1	1404				

 Report Date: 24-Jul-2017 11:24:46
 Chrom Revision: 2.2 26-Jun-2017 08:09:44

 Data File:
 \\ChromNa\Sacramento\ChromData\A8_N\20170723-45765.b\2017.07.23ICAL_008.d

Data File:	\\Cnr	omivaisa	acrameni	(O\Cnrom	Data\A8_N\201	70723-4576	5.D\2017.07.23ICAI	L_008.a		
Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
* 62 13C2-PFOA 415.00 > 370.00		2.740	0.045		3590668	50.0			24688	
13 Sodium 1H,	1H,2H,2	H-perflu	orooctan					0F F		
427.00 > 407.00 D 12 M2-6:2FTS	5			1.000	3742357	90.6		95.5	40418	
429.00 > 409.00 D 14 13C4 PFO		2.766	-0.010		2191385	46.1		97.0	26801	
417.00 > 372.00 15 Perfluorooct		2.793	-0.008		3678248	44.8		89.6	25293	
413.00 > 369.00 413.00 > 169.00	2.785	2.794 2.794		1.000 1.000	7841830 4781867	99.9	1.64(0.90-1.10)	99.9 99.9	1572 13688	
16 Perfluorohe	ptanesu	Ifonic Ac	id				1.04(0.90-1.10)			
449.00 > 80.00 D 18 13C4 PFO		2.801	-0.009	1.000	10965918	89.6		94.2	40769	
503.00 > 80.00 17 Perfluorooci			-0.006		5213679	48.2		101	15286	
499.00 > 80.00 499.00 > 99.00	3.170	3.176	-0.006 -0.006	1.000 1.000	10055816 2139232	87.2	4.70(0.90-1.10)	94.0 94.0	8421 13271	
D 19 13C5 PFN	A			1.000			4.70(0.90-1.10)			
468.00 > 423.00 20 Perfluorono		3.180 icid	-0.010		3093351	47.1		94.1	25813	
463.00 > 419.00 D 21 13C8 FOS	3.170		-0.010	1.000	6011197	95.4		95.4	13300	
506.00 > 78.00	3.510		0.005		8997387	49.2		98.4	13278	
22 Perfluorooct 498.00 > 78.00				1.000	16123202	99.4		99.4	20633	
25 Sodium 1H, 527.00 > 507.00		-		ne 1.000	2923571	92.2		96.3	13336	
D 26 M2-8:2FTS 529.00 > 509.00		2 529	-0.008		1666985	45.7		95.3	19640	
D 23 13C2 PFD	A									
515.00 > 470.00 24 Perfluorode			-0.008		2576945	46.2		92.3	7872	
513.00 > 469.00 D 27 d3-NMeFO		3.542	0.0	1.000	5119744	101.4		101	9516	
573.00 > 419.00	3.687	3.698			1068765	49.2		98.4	6040	
28 N-methyl pe 570.00 > 419.00				1.003	2007359	103.2		103	18812	
29 Perfluorode 599.00 > 80.00			id -0.004	1.000	6522922	96.1		99.7	17457	
D 32 d5-NEtFOS						40.7		07.4	2000	
589.00 > 419.00 33 N-ethyl perfl	luorooct	ane sulfo			1068267	48.7		97.4	2900	
584.00 > 419.00 31 Perfluoroun			-0.005	1.002	1804400	99.5		99.5	13325	
563.00 > 519.00	3.870		-0.005	1.000	3918710	102.4		102	4859	
D 30 13C2 PFUi 565.00 > 520.00		3.875	-0.005		Page 711 of 1	1104 ^{45.8}		91.6	13023	

Report Date: 24-Jul-2017 11:24:46 Chrom Revision: 2.2 26-Jun-2017 08:09:44 \\Chrom\\a\Sacramento\\Chrom\Data\A8 \\\20170723-45765 \b\\2017 07 23ICAL \008 d

Data File:	\\Chrc	mNa\Sa	acrament	o\Chrom	Data\A8_N\201	70723-4576	5.b\2017.07.23ICAL	_008.d		
Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 34 d-N-MeFOS	SA-M									
515.00 > 169.00		3.986	0.009		2454402	52.1		104	772	
35 MeFOSA										
512.00 > 169.00	4.003	3.992	0.011	1.000	4575819	101.5		102	7909	
37 Perfluorodoo	decanoio	: acid								
613.00 > 569.00			-0.010	1.000	3604171	88.1		88.1	1094	
D 36 13C2 PFDc	ρΑ									
615.00 > 570.00		4.169	-0.002		2201944	49.3		98.6	8197	
D 38 d-N-EtFOS	A-M									
531.00 > 169.00	4.184	4.173	0.011		2530450	51.8		104	4390	
39 N-ethylperflu	uoro-1-o	ctanesu	lfonami							
526.00 > 169.00	4.184	4.178	0.006	1.000	4527078	96.5		96.5	6069	
41 Perfluorotrid	ecanoic	acid								
663.00 > 619.00	4.430	4.434	-0.004	1.000	3755028	100.2		100	1312	
42 Perfluorotetr	adecan	oic acid								
712.50 > 668.90		4.676	-0.009	1.000	7729497	91.3		91.3	577	
713.00 > 169.00	4.655	4.676	-0.021	0.997	1024291		7.55(0.00-0.00)	91.3	9439	
D 43 13C2-PFT6										
715.00 > 670.00	4.667	4.676	-0.009		3733385	46.0		91.9	13666	
D 44 13C2-PFH)										
815.00 > 770.00	5.079	5.091	-0.012		2075916	50.3		101	4789	
45 Perfluorohex										
813.00 > 769.00	5.079	5.092	-0.013	1.000	3564510	101.6		102	483	
46 Perfluorooct										
913.00 > 869.00	5.441	5.458	-0.017	1.000	3408805	101.2		101	1142	

OC Flag Legend Processing Flags

NC - Not Calibrated

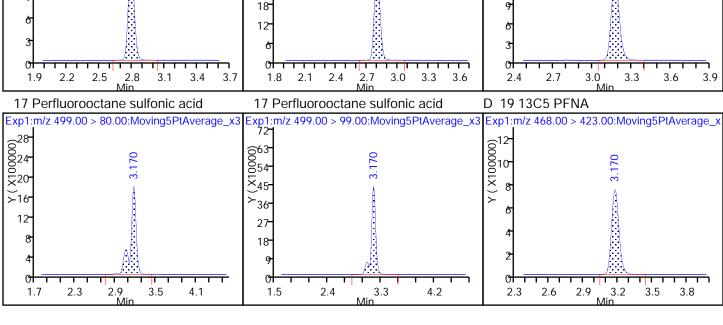
Review Flags

M - Manually Integrated

Reagents:

LCPFC_FULL-L6_00006 Units: mL Amount Added: 1.00

Report Date: 24-Jul-2017 11:24:46 Chrom Revision: 2.2 26-Jun-2017 08:09:44 TestAmerica Sacramento Data File: \\ChromNa\\Sacramento\\ChromData\\A8_N\\20170723-45765.b\\2017.07.23ICAL_008.d **Injection Date:** 23-Jul-2017 13:44:37 Instrument ID: A8_N Lims ID: IC L6 Full Client ID: Operator ID: SACINSTLCMS01 ALS Bottle#: 33 Worklist Smp#: 8 Injection Vol: 2.0 ul Dil. Factor: 1.0000 Limit Group: LC PFC_DOD ICAL Method: $A8_N$ D 113C4 PFBA 2 Perfluorobutyric acid D 313C5-PFPeA Exp1:m/z 217.00 > 172.00:Moving5PtAverage_x Exp1:m/z 212.90 > 169.00:Moving5PtAverage_x Exp1:m/z 267.90 > 223.00:Moving5PtAverage_x 635 0030 030 056-0648-(00024 00001x)14 ×25 **≻**20 32 15 24 10 16 1.0 1.6 1.2 1.3 1.9 2.2 1.8 2.1 1.3 1.6 1.9 2.2 2.5 5 Perfluorobutanesulfonic acid 5 Perfluorobutanesulfonic acid 4 Perfluoropentanoic acid Exp1:m/z 262.90 > 219.00:Moving5PtAverage_x Exp1:m/z 298.90 > 80.00:Moving5PtAverage_x3 Exp1:m/z 298.90 > 99.00:Moving5PtAverage_x3 (70-(00060-(50-(50-(35⁻ (30) (30) (30) (25⁻ (049 00042 ×35 -40 >20 15 21 20 10 10 2.0 1.5 1.8 2.4 1.4 1.7 2.3 2.5 1.2 2.1 1.3 1.6 1.9 2.2 1.1 1.0 61 Sodium 1H,1H,2H,2H-perfluorohexan& Perfluorohexanoic acid 7 13C2 PFHxA Exp1:m/z 327.00 > 307.00:Moving5PtAverage_x Exp1:m/z 313.00 > 269.00:Moving5PtAverage_ Exp1:m/z 315.00 > 270.00:Moving5PtAverage_x 21 (35 0030 X25 (00018 (000015 X) 12 (0000015^t ∑₁₂ >2015 10 01 1.5 2.1 2.7 1.8 2.1 2.7 0.9 1.0 1.6 2.2 2.8 1.5 2.4 1.2 9 13C4-PFHpA 10 Perfluoroheptanoic acid D 11 1802 PFHxS Exp1:m/z 367.00 > 322.00:Moving5PtAverage_> Exp1:m/z 363.00 > 319.00:Moving5PtAverage_> Exp1:m/z 403.00 > 84.00:Moving5PtAverage_x3 (0000015 X12 630 00 025 ()30 ()25 ×₂₀ 15 10 10 0 02.0 2.3 2.6 2.9 1.5 3.0 3.3 2.0 2.3 2.6 2.9 3.2 1.7 1.7



Chrom Revision: 2.2 26-Jun-2017 08:09:44

Chrom Revision: 2.2 26-Jun-2017 08:09:44

Report Date: 24-Jul-2017 11:24:46 Chrom Revision: 2.2 26-Jun-2017 08:09:44 Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170723-45765.b\2017.07.23ICAL_008.d

45 Perfluorohexadecanoic acid D 44 13C2-PFHxDA 46 Perfluorooctadecanoic acid Exp1:m/z 815.00 > 770.00:Moving5PtAverage_x Exp1:m/z 813.00 > 769.00:Moving5PtAverage_x Exp1:m/z 913.00 > 869.00:Moving5PtAverage_x (0000012 (X) X 5.441 (00072 X60 ≻₄₈-36- 24 12 0 0 0 4.7 5.0 5.3 5.6 4.4 4.7 5.0 5.3 5.6 4.8 5.1 5.4 5.7 6.0 4.4

Report Date: 24-Jul-2017 11:24:46 Chrom Revision: 2.2 26-Jun-2017 08:09:44 Manual Integration/User Assign Peak Report

TestAmerica Sacramento

Data File: \ChromNa\Sacramento\ChromData\A8_N\20170723-45765.b\2017.07.23ICAL_008.d

Injection Date: 23-Jul-2017 13:44:37 Instrument ID: A8_N

Lims ID: IC L6 Full

Client ID:

Operator ID: SACINSTLCMS01 ALS Bottle#: 33 Worklist Smp#: 8

Injection Vol: 2.0 ul Dil. Factor: 1.0000

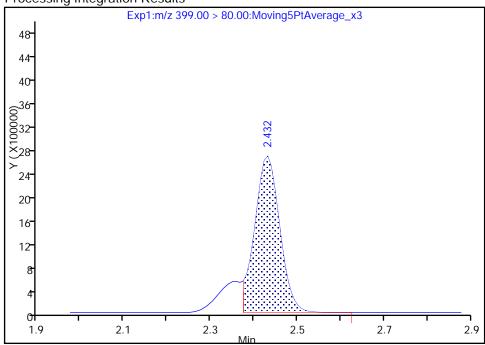
Method: A8_N Limit Group: LC PFC_DOD ICAL

Column: Detector EXP1

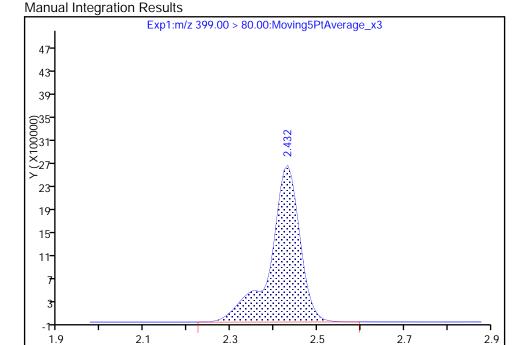
8 Perfluorohexanesulfonic acid, CAS: 355-46-4

Signal: 1

RT: 2.43 Area: 10537173 Amount: 76.645731 Amount Units: ng/ml **Processing Integration Results**



RT: 2.43
Area: 12621118
Amount: 85.772175
Amount Units: ng/ml



Reviewer: phomsophat, 23-Jul-2017 15:04:02

Audit Action: Manually Integrated

Audit Reason: Assign Peak

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Report Date: 24-Jul-2017 11:24:50 Chrom Revision: 2.2 26-Jun-2017 08:09:44

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170723-45765.b\2017.07.23ICAL_009.d

Lims ID: IC L7 Full

Client ID:

Sample Type: IC Calib Level: 7

Inject. Date: 23-Jul-2017 13:51:31 ALS Bottle#: 34 Worklist Smp#: 9

Injection Vol: 2.0 ul Dil. Factor: 1.0000

Sample Info: L7-FULL

Misc. Info.: Plate: 1 Rack: 1

Operator ID: SACINSTLCMS01 Instrument ID: A8_N

Sublist: chrom-A8_N*sub19

Method: \ChromNa\Sacramento\ChromData\A8_N\20170723-45765.b\A8_N.m

Limit Group: LC PFC_DOD ICAL

Last Update: 24-Jul-2017 11:24:49 Calib Date: 23-Jul-2017 13:58:26

Integrator: Picker

Quant Method: Isotopic Dilution Quant By: Initial Calibration

Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20170723-45765.b\2017.07.23ICAL_010.d

Column 1: Det: EXP1

Process Host: XAWRK004

First Level Reviewer: phomsophat Date: 23-Jul-2017 15:04:48

First Level Reviewer: pnomsopnat				Date: 23-Jul-2017			23-Jul-2017 15:04:48	3		
Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 113C4 PFBA 217.00 > 172.00 1.554 1.558 -0.004 7209685						47.2		00.4	22425	
217.00 > 172.00 2 Perfluorobut			-0.004		7209685	46.2		92.4	32425	
212.90 > 169.00	•		-0.001	1.000	21295694	167.4		83.7	8551	
D 3 13C5-PFPeA 267.90 > 223.00 1.773 1.780 -0.007					4874149	44.1		88.2	54522	
4 Perfluoropentanoic acid							00.2	34322		
262.90 > 219.00		1.783	-0.001	1.000	17506811	172.3		86.2	9880	
D 47 13C3-PFB		1 206	0.006		126192	NC			5807	
301.90 > 83.00										
298.90 > 80.00	1.800	1.808	-0.008	1.000	26901153	138.2		78.2	11804	
	1.800	1.808	-0.008	1.000	13510276		1.99(0.00-0.00)	78.2	14172	
61 Sodium 1H, 327.00 > 307.00		•	oronexar -0.009	ne 1.000	7430551	162.3		86.9	82822	
D 7 13C2 PFHx										
315.00 > 270.00			-0.007		4793468	47.4		94.8	36476	
6 Perfluorohex 313.00 > 269.00		2.070	-0.007	1.000	16363337	179.3		89.6	25354	
10 Perfluoroheptanoic acid										
363.00 > 319.00		2.420	-0.013	1.000	14130024	187.9		94.0	18386	
D 9 13C4-PFH _p 367.00 > 322.00		2.420	-0.013		3662996	43.7		87.4	24696	
8 Perfluorohexanesulfonic acid										
399.00 > 80.00		2.436	-0.013	1.000	23173026	163.9		90.1	9313	
D 11 18O2 PFH 403.00 > 84.00	xS 2.423	2.436	-0.013		6181226	45.0		95.1	32925	
Page 710 of 1104										

Report Date: 24-Jul-2017 11:24:50 Chrom Revision: 2.2 26-Jun-2017 08:09:44 FXP DLT RFI Amount

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
_			IXI	101	ПСЭРОПЭС	119/1111	Ratio(Limits)	701100	3/11	i lugs
* 62 13C2-PFOA 415.00 > 370.00		2.740	0.037		3259895	50.0			24671	
D 12 M2-6:2FTS	6									
429.00 > 409.00		2.766			2239134	47.1		99.1	28626	
13 Sodium 1H, 427.00 > 407.00		•		e 1.000	6779939	160.6		84.7	54846	
D 14 13C4 PFO		2.700	-0.016	1.000	0117737	100.0		04.7	34040	
417.00 > 372.00		2.793	-0.016		3327722	40.5		81.0	27412	
15 Perfluorooc										
413.00 > 369.00			-0.010	1.000	13780241	194.1	1 57/0 00 1 10)	97.0	2429	
413.00 > 169.00			-0.010	1.000	8800027		1.57(0.90-1.10)	97.0	14415	
16 Perfluorohe 449.00 > 80.00	•		-0.010	1.000	20645661	172.0		90.3	47341	
17 Perfluorooc										
499.00 > 80.00		3.176		1.000	20749676	183.4		98.8	245338	
499.00 > 99.00		3.176	-0.016	1.000	4386746		4.73(0.90-1.10)	98.8	10185	
D 18 13C4 PFO		2 17/	0.017		F11/F00	47.0		00.0	11220	
503.00 > 80.00		3.176	-0.016		5116508	47.3		98.9	11239	
20 Perfluorono 463.00 > 419.00		3.180	-0.011	1.000	10926680	187.7		93.8	15520	
D 19 13C5 PFN		01.00	0.0		.0,2000			70.0	.0020	
468.00 > 423.00		3.180	-0.011		2859301	43.5		87.0	17124	
D 21 13C8 FOS	A									
506.00 > 78.00	3.499	3.505	-0.007		8798953	48.1		96.3	13132	
22 Perfluorooc				1 000	0/444001	1///		00.0	1 1010	
498.00 > 78.00		3.508	0.0	1.000	26444981	166.6		83.3	14219	
D 26 M2-8:2FTS 529.00 > 509.00		3.528	-0.010		1732871	47.5		99.1	21862	
25 Sodium 1H,				ne	1702071	47.5		77.1	21002	
527.00 > 507.00		•			5538945	168.1		87.7	13805	
D 23 13C2 PFD	Α									
515.00 > 470.00	3.529	3.539	-0.010		2614091	46.8		93.6	8168	
24 Perfluorode										
513.00 > 469.00		3.542	-0.013	1.000	9589389	187.2		93.6	12458	
D 27 d3-NMeFC 573.00 > 419.00		2 400	-0.014		1133763	52.2		104	4945	
28 N-methyl pe					1133703	32.2		104	4940	
570.00 > 419.00				1.000	4177961	202.5		101	9249	
29 Perfluorode										
599.00 > 80.00			-0.014	1.000	12396187	186.0		96.5	22600	
D 32 d5-NEtFOS	SAA									
589.00 > 419.00	3.851	3.866	-0.015		1056852	48.2		96.4	2864	
D 30 13C2 PFU		0.075	0.011		1010150			00.0	45050	
565.00 > 520.00			-0.014		1818459	44.6		89.3	15052	
31 Perfluoroun 563.00 > 519.00			-0.014	1.000	7069518	189.4		94.7	12087	
33 N-ethyl perf				1.000	, 50 / 5 10	107.4		77.1	12001	
584.00 > 419.00			-0.014	1.003	Page 720 of 1	104197.4		98.7	13669	
					ray e /20 01 1	104				

Report Date: 24-Jul-2017 11:24:50 Chrom Revision: 2.2 26-Jun-2017 08:09:44

Data File:	\\Chrc	mNa\Sa	acrament	:o\Chrom	Data\A8_N\201	70723-4576	5.b\2017.07.23ICAL	_009.d		
Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 34 d-N-MeFOS	SA-M									
515.00 > 169.00	3.989	3.986	0.003		2520018	53.5		107	793	
35 MeFOSA										
512.00 > 169.00	3.989	3.992	-0.003	1.000	9209985	199.0		99.5	9902	
37 Perfluorodod	decanoio	acid								
613.00 > 569.00	4.147	4.168	-0.021	1.000	8087946	208.5		104	2669	
D 36 13C2 PFDo										
615.00 > 570.00		4.169	-0.022		2087489	46.7		93.5	6305	
D 38 d-N-EtFOS/		4 4 7 0	0.001		0570045	F0.7		105	2070	
531.00 > 169.00		4.173	0.001		2573945	52.7		105	3970	
39 N-ethylperflu 526.00 > 169.00				1.000	9600643	201.1		101	11981	
			-0.004	1.000	9000043	201.1		101	11901	
41 Perfluorotride 663.00 > 619.00			-0.023	1.000	6846516	192.6		96.3	2458	
D 43 13C2-PFTe		7.707	0.023	1.000	0040010	172.0		70.0	2400	
715.00 > 670.00		4.676	-0.022		3714139	45.7		91.5	13860	
42 Perfluorotetra										
712.50 > 668.90		4.676	-0.022	1.000	13936575	173.7		86.8	1109	
713.00 > 169.00	4.642	4.676	-0.034	0.997	1837255		7.59(0.00-0.00)	86.8	12455	
D 44 13C2-PFHx	ďΩΑ									
815.00 > 770.00	5.058	5.091	-0.033		1923205	46.6		93.1	4558	
45 Perfluorohex	kadecan	oic acid								
813.00 > 769.00	5.058	5.092	-0.034	1.000	6735864	203.1		102	864	
46 Perfluoroocta										
913.00 > 869.00	5.422	5.458	-0.036	1.000	6388834	200.0		100	1930	
OC Flag Leg	end									

OC Flag Legend Processing Flags

NC - Not Calibrated

Reagents:

LCPFC_FULL-L7_00004 Amount Added: 1.00 Units: mL

Report Date: 24-Jul-2017 11:24:50 Chrom Revision: 2.2 26-Jun-2017 08:09:44 TestAmerica Sacramento Data File: \\ChromNa\\Sacramento\\ChromData\\A8_N\\20170723-45765.b\\2017.07.23ICAL_009.d **Injection Date:** 23-Jul-2017 13:51:31 Instrument ID: A8_N Lims ID: IC L7 Full Client ID: Operator ID: SACINSTLCMS01 ALS Bottle#: 34 Worklist Smp#: 9 2.0 ul Dil. Factor: 1.0000 Injection Vol: Limit Group: LC PFC_DOD ICAL Method: $A8_N$ D 113C4 PFBA 2 Perfluorobutyric acid D 3 13C5-PFPeA Exp1:m/z 212.90 > 169.00:Moving5PtAverage_x | Exp1:m/z 267.90 > 223.00:Moving5PtAverage_x Exp1:m/z 217.00 > 172.00:Moving5PtAverage_x (00001× ×)20 84- ©21- 0218-×60 15 36 10 24 1.1 1.4 1.7 2.0 0.8 1.1 1.4 2.0 0.9 1.2 1.5 1.8 2.1 5 Perfluorobutanesulfonic acid 5 Perfluorobutanesulfonic acid 4 Perfluoropentanoic acid Exp1:m/z 298.90 > 99.00:Moving5PtAverage_x3 Exp1:m/z 262.90 > 219.00:Moving5PtAverage_x Exp1:m/z 298.90 > 80.00:Moving5PtAverage_x3 (X1000000) Y (77-00066-×55-©56**-**×40 33 24 22 16 11 1.8 2.1 2.4 2.7 1.0 2.2 2.5 2.0 1.2 1.5 1.3 1.6 1.9 1.4 2.3 1.1 61 Sodium 1H,1H,2H,2H-perfluorohexable 7 13C2 PFHxA 6 Perfluorohexanoic acid Exp1:m/z 327.00 > 307.00:Moving5PtAverage_x Exp1:m/z 315.00 > 270.00:Moving5PtAverage_) Exp1:m/z 313.00 > 269.00:Moving5PtAverage_x 35 (21°000018° ×15° 663 654 830 8₂₅ × × × ×45 **≻**36• 15 27 10 18 1.5 2.1 1.5 1.8 2.1 2.7 0.9 2.7 2.4 1.6 2.2 2.8 1.2 1.0 9 13C4-PFHpA 8 Perfluorohexanesulfonic acid 10 Perfluoroheptanoic acid Exp1:m/z 363.00 > 319.00:Moving5PtAverage_x Exp1:m/z 367.00 > 322.00:Moving5PtAverage_x Exp1:m/z 399.00 > 80.00:Moving5PtAverage_x3 (56⁻ (00048⁻ (0000012 (0000012 670 660 ×40 ×50 **≻**40 24 30 16 20 10 0 0 $^{\circ}$ 1.8 2.1 2.4 2.7 3.0 3.3 2.0 2.6 3.2 1.5 1.7 1.4

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170723-45765.b\2017.07.23ICAL_009.d 62 13C2-PFOA Exp1:m/z 403.00 > 84.00:Moving5PtAverage_x3 Exp1:m/z 415.00 > 370.00:Moving5PtAverage_x Exp1:m/z 429.00 > 409.00:Moving5PtAverage_x (12 (X) X (X 00024 0000120 ×)16 Y (X100000) 1.9 2.5 2.9 2.2 2.8 2.0 2.3 2.6 3.2 3.5 2.0 2.3 2.6 2.9 3.2 3.5 1.6 13 Sodium 1H,1H,2H,2H-perfluoroocta De 14 13C4 PFOA 15 Perfluorooctanoic acid Exp1:m/z 427.00 > 407.00:Moving5PtAverage_x Exp1:m/z 417.00 > 372.00:Moving5PtAverage_x Exp1:m/z 413.00 > 369.00:Moving5PtAverage_x 49 (012 10 10 8 0042 0042 X ©28 0024 Σ_{20} ∑28- 21 12 14 2.3 2.1 2.4 3.3 2.6 3.0 15 Perfluorooctanoic acid 16 Perfluoroheptanesulfonic Acid 17 Perfluorooctane sulfonic acid Exp1:m/z 449.00 > 80.00:Moving5PtAverage_x3 Exp1:m/z 413.00 > 169.00:Moving5PtAverage_x Exp1:m/z 499.00 > 80.00:Moving5PtAverage_x3 (56⁻ 00048 1240 1240 030 0025 670 6060 \S_{20} ×50 15 24 30 10 16 20 2.4 2.7 3.0 3.3 2.3 2.9 3.5 3.6 2.1 1.7 0.6 D 18 13C4 PFOS 17 Perfluorooctane sulfonic acid 20 Perfluorononanoic acid Exp1:m/z 499.00 > 99.00:Moving5PtAverage_x3 Exp1:m/z 503.00 > 80.00:Moving5PtAverage_x3 Exp1:m/z 463.00 > 419.00:Moving5PtAverage_) (0000018 X)15 ×12 (00014⁻ (000012⁻ (035- ×25 ≻₂₀ 15 10 0 2.4 3.0 3.6 4.2 2.3 2.6 2.9 3.2 3.5 3.8 2.6 2.9 3.2 3.5 3.8 4.1 1.8

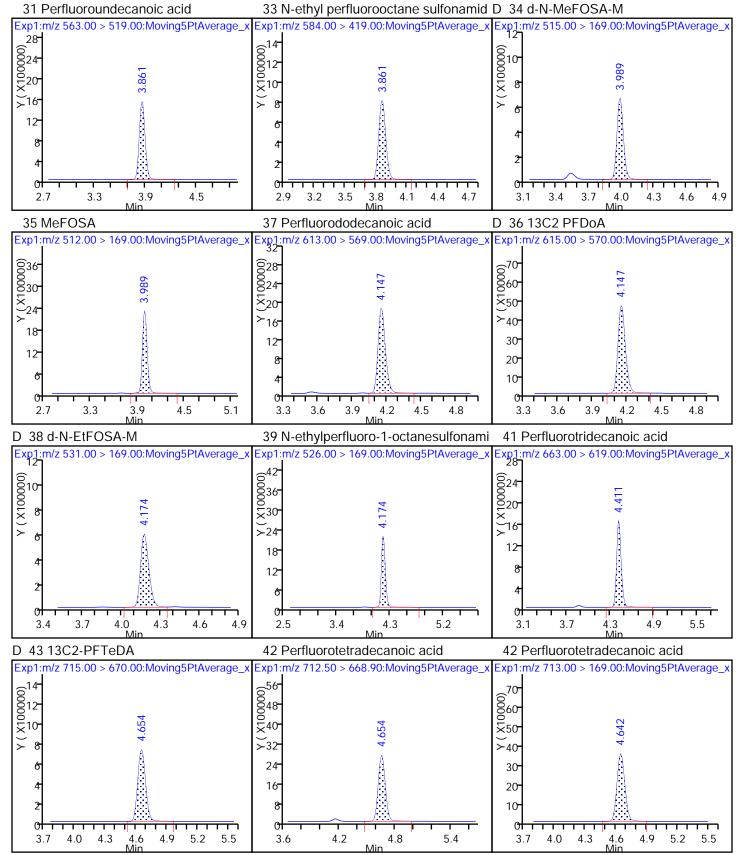
Chrom Revision: 2.2 26-Jun-2017 08:09:44

Report Date: 24-Jul-2017 11:24:50

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170723-45765.b\2017.07.23ICAL_009.d D 19 13C5 PFNA D 21 13C8 FOSA 22 Perfluorooctane Sulfonamide Exp1:m/z 468.00 > 423.00:Moving5PtAverage_x Exp1:m/z 506.00 > 78.00:Moving5PtAverage_x3 Exp1:m/z 498.00 > 78.00:Moving5PtAverage_x3 (35 (0030 (30 (25 (X100000) X 684 6072 ×60 <u></u>20 ≻48 15- 36 10 24 12 2.6 3.5 2.4 2.7 3.0 3.3 3.6 3.9 2.9 3.2 3.5 3.8 4.1 2.3 2.9 4.1 4.7 25 Sodium 1H,1H,2H,2H-perfluorodecabe23 13C2 PFDA D 26 M2-8:2FTS Exp1:m/z 527.00 > 507.00:Moving5PtAverage_x Exp1:m/z 529.00 > 509.00:Moving5PtAverage_x Exp1:m/z 515.00 > 470.00:Moving5PtAverage_x 63 Y (X100000) 000015-X 00054 X45 >36 27 18 3.0 3.6 3.9 2.9 3.5 3.0 3.3 3.6 3.3 3.8 3.9 24 Perfluorodecanoic acid D 27 d3-NMeFOSAA 28 N-methyl perfluorooctane sulfonami Exp1:m/z 573.00 > 419.00:Moving5PtAverage_> Exp1:m/z 513.00 > 469.00:Moving5PtAverage_> Exp1:m/z 570.00 > 419.00:Moving5PtAverage_x (35-0030-×25-000012 X 642 636 ×30 ≻20 15 18 10 12 0 4.3 3.7 2.9 3.2 3.5 3.2 2.5 3.1 3.8 4.1 4.4 2.9 3.5 3.8 4.1 4.4 29 Perfluorodecane Sulfonic acid D 32 d5-NEtFOSAA D 30 13C2 PFUnA Exp1:m/z 599.00 > 80.00:Moving5PtAverage_x3 Exp1:m/z 589.00 > 419.00:Moving5PtAverage_x Exp1:m/z 565.00 > 520.00:Moving5PtAverage_) (000042 X35 42 (70⁻ (X10000) 30-×50 21 18 30 12 14 20 10 2.8 3.4 4.0 4.6 3.2 3.5 3.8 4.1 4.4 3.2 3.5 3.8 4.1 4.4 4.7

Chrom Revision: 2.2 26-Jun-2017 08:09:44

Report Date: 24-Jul-2017 11:24:50



Report Date: 24-Jul-2017 11:24:50 Chrom Revision: 2.2 26-Jun-2017 08:09:44 Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170723-45765.b\2017.07.23ICAL_009.d

45 Perfluorohexadecanoic acid D 44 13C2-PFHxDA 46 Perfluorooctadecanoic acid Exp1:m/z 913.00 > 869.00:Moving5PtAverage_x Exp1:m/z 815.00 > 770.00:Moving5PtAverage_x Exp1:m/z 813.00 > 769.00:Moving5PtAverage_x 28 77 (0024 00001×)16 (00001X) × 44 5.058 _ ≻16- 12 12 33 22 О 0 0 4.6 4.9 5.2 5.5 5.8 4.4 4.7 5.0 5.3 5.6 5.9 4.5 4.8 5.1 5.4 5.7 6.0 6.3 4.3 4.1

Report Date: 24-Jul-2017 11:24:53 Chrom Revision: 2.2 26-Jun-2017 08:09:44

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170723-45765.b\2017.07.23ICAL_010.d

Lims ID: IC M2-4:2FTS

Client ID:

Sample Type: IC Calib Level: 1

Inject. Date: 23-Jul-2017 13:58:26 ALS Bottle#: 37 Worklist Smp#: 10

Injection Vol: 2.0 ul Dil. Factor: 1.0000

Sample Info: M2:4-2FTS Calibration Std

Misc. Info.: Plate: 1 Rack: 1

Operator ID: SACINSTLCMS01 Instrument ID: A8_N

Sublist: chrom-A8_N*sub19

Limit Group: LC PFC_DOD ICAL

Last Update: 24-Jul-2017 11:24:52 Calib Date: 23-Jul-2017 13:58:26

Integrator: Picker

Quant Method: Isotopic Dilution Quant By: Initial Calibration

Last ICal File: \ChromNA\Sacramento\ChromData\A8_N\20170723-45765.b\2017.07.23ICAL_010.d

Column 1 : Det: EXP1

Process Host: XAWRK004

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 60 M2-4:2FTS 329.00 > 309.00		2.009	0.0		3553057	NC			37245	
* 62 13C2-PFO <i>A</i> 415.00 > 370.00	-	2.740	0.011		6829938	50.0			35064	

QC Flag Legend

Processing Flags

NC - Not Calibrated

Reagents:

LCM2-4:2FTSIC_00002 Amount Added: 1.00 Units: mL

Report Date: 24-Jul-2017 11:24:53 Chrom Revision: 2.2 26-Jun-2017 08:09:44

TestAmerica Sacramento

Injection Date: 23-Jul-2017 13:58:26 Instrument ID: A8_N

Lims ID: IC M2-4:2FTS

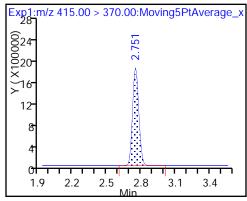
Client ID:

Operator ID: SACINSTLCMS01 ALS Bottle#: 37 Worklist Smp#: 10

Injection Vol: 2.0 ul Dil. Factor: 1.0000

Method: A8_N Limit Group: LC PFC_DOD ICAL

* 62 13C2-PFOA



FORM VII LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-29732-1

SDG No.:

Lab Sample ID: <u>ICV 320-175252/12</u> Calibration Date: <u>07/20/2017 18:18</u>

Instrument ID: A8_N Calib Start Date: 07/20/2017 17:15

GC Column: GeminiC18 3×100 ID: 3.00 (mm) Calib End Date: 07/20/2017 18:04

Lab File ID: 2017.07.20ICAL_012.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanoic acid (PFBA)	AveID	0.9107	0.9350		50.8	49.5	2.7	25.0
Perfluoropentanoic acid (PFPeA)	AveID	0.997	1.081		53.7	49.5	8.4	25.0
Perfluorobutanesulfonic acid (PFBS)	AveID	1.422	1.601		49.3	43.8	12.6	25.0
Perfluorohexanoic acid (PFHxA)	AveID	0.9374	1.040		54.9	49.5	11.0	25.0
Perfluoroheptanoic acid (PFHpA)	AveID	1.009	1.099		53.9	49.5	8.9	25.0
Perfluorohexanesulfonic acid (PFHxS)	AveID	1.023	1.070		48.9	46.8	4.6	25.0
6:2FTS	AveID	0.8582	0.9405		51.4	46.9	9.6	25.0
Perfluorooctanoic acid (PFOA)	AveID	1.046	1.133		53.6	49.5	8.3	25.0
Perfluoroheptanesulfonic Acid (PFHpS)	AveID	1.174	1.228		49.3	47.1	4.7	25.0
Perfluorononanoic acid (PFNA)	AveID	1.000	1.056		52.3	49.5	5.6	25.0
Perfluorooctanesulfonic acid (PFOS)	AveID	1.034	0.9896		45.2	47.3	-4.3	25.0
8:2FTS	AveID	0.9182	0.9403		48.6	47.4	2.4	25.0
Perfluorooctane Sulfonamide (FOSA)	AveID	0.9235	0.9705		52.0	49.5	5.1	25.0
Perfluorodecanoic acid (PFDA)	AveID	0.9359	0.9767		51.7	49.5	4.4	25.0
N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA)	AveID	0.9079	0.9670		52.7	49.5	6.5	25.0
Perfluorodecanesulfonic acid (PFDS)	AveID	0.6369	0.6599		49.5	47.8	3.6	25.0
N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)	AveID	0.8499	0.8856		51.6	49.5	4.2	25.0
Perfluoroundecanoic acid (PFUnA)	L2ID		1.039		51.0	49.5	3.0	25.0
MeFOSA	AveID	0.8961	0.9655		53.3	49.5	7.7	25.0
Perfluorododecanoic acid (PFDoA)	AveID	0.9442	1.017		53.3	49.5	7.8	25.0
N-EtFOSA-M	AveID	0.9273	1.032		55.1	49.5	11.3	25.0
Perfluorotridecanoic Acid (PFTriA)	AveID	0.8512	0.9449		55.0	49.5	11.0	25.0
Perfluorotetradecanoic acid (PFTeA)	AveID	1.947	2.005		51.0	49.5	3.0	25.0
Perfluoro-n-hexadecanoic acid (PFHxDA)	L2ID		0.9234		53.0	49.5	7.1	25.0
Perfluoro-n-octadecanoic acid (PFODA)	AveID	0.8788	0.9130		51.4	49.5	3.9	25.0
13C4 PFBA	Ave	179976	178028		49.0	49.5	-1.1	50.0
13C5 PFPeA	Ave	119573	116570		48.3	49.5	-2.5	50.0
13C2 PFHxA	Ave	110403	106759		47.9	49.5	-3.3	50.0
13C4-PFHpA	Ave	97315	95437		48.5	49.5	-1.9	50.0
1802 PFHxS	Ave	160345	155563		45.4	46.8	-3.0	50.0
M2-6:2FTS	Ave	52582	50555		45.2	47.0	-3.9	50.0

FORM VII LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-29732-1

SDG No.:

Lab Sample ID: <u>ICV 320-175252/12</u> Calibration Date: <u>07/20/2017 18:18</u>

Instrument ID: A8_N Calib Start Date: 07/20/2017 17:15

GC Column: GeminiC18 3×100 ID: 3.00 (mm) Calib End Date: 07/20/2017 18:04

Lab File ID: 2017.07.20ICAL_012.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE CF	CF	MIN CF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
13C4 PFOA	Ave	87797	83504		47.1	49.5	-4.9	50.0
13C4 PFOS	Ave	118039	113145		45.4	47.3	-4.1	50.0
13C5 PFNA	Ave	69282	65202		46.6	49.5	-5.9	50.0
13C8 FOSA	Ave	196294	177132		44.7	49.5	-9.8	50.0
M2-8:2FTS	Ave	39250	37570		45.4	47.4	-4.3	50.0
13C2 PFDA	Ave	60512	57778		47.3	49.5	-4.5	50.0
d3-NMeFOSAA	Ave	21953	21994		49.6	49.5	0.2	50.0
13C2 PFUnA	Ave	41991	38026		44.8	49.5	-9.4	50.0
d5-NEtFOSAA	Ave	22991	21543		46.4	49.5	-6.3	50.0
d-N-MeFOSA-M	Ave	50429	49400		48.5	49.5	-2.0	50.0
13C2 PFDoA	Ave	43561	39439		44.8	49.5	-9.5	50.0
d-N-EtFOSA-M	Ave	50912	49235		47.9	49.5	-3.3	50.0
13C2-PFTeDA	Ave	81327	74098		45.1	49.5	-8.9	50.0
13C2-PFHxDA	Ave	42486	39580		46.1	49.5	-6.8	50.0

Report Date: 21-Jul-2017 11:40:39 Chrom Revision: 2.2 26-Jun-2017 08:09:44

> TestAmerica Sacramento **Target Compound Quantitation Report**

Data File:

Lims ID: **ICV Full**

Client ID:

Sample Type: **ICV**

Inject. Date: 20-Jul-2017 18:18:05 ALS Bottle#: Worklist Smp#: 36 12

Injection Vol: 2.0 ul Dil. Factor: 1.0000

Sample Info: ICV

Misc. Info.: Plate: 1 Rack: 1

Operator ID: SACINSTLCMS01 Instrument ID: A8_N

Sublist:

Method: \\ChromNa\Sacramento\ChromData\A8_N\20170720-45703.b\A8_N.m

Limit Group: LC PFC_DOD ICAL

Last Update: 21-Jul-2017 11:40:38 Calib Date: 20-Jul-2017 18:04:17

Picker Integrator:

Quant Method: Quant By: Isotopic Dilution **Initial Calibration**

Last ICal File:

Column 1: Det: EXP1

Process Host: XAWRK007

00 1-1 0017 10 10 00

First Level Reviewer: phomsophat					Date:	2	0-Jul-2017 18:49:20)		
Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 113C4 PFBA	١									
217.00 > 172.00		1.545	0.011		8813264	49.0		98.9	34103	
2 Perfluorobut	yric acid									
212.90 > 169.00	1.556	1.549	0.007	1.000	8240708	50.8			4157	
D 3 13C5-PFP6										
267.90 > 223.00	1.766	1.752	0.014		5770808	48.3		97.5	50770	
4 Perfluoroper										
262.90 > 219.00		1.753	0.013	1.000	6239113	53.7			3744	
D 47 13C3-PFB										
301.90 > 83.00		1.777	0.016		156817	NC			5996	
5 Perfluorobut			0.04.4	4 000	1000000	40.0				
	1.793 1.793	1.779 1.779	0.014 0.014	1.000 1.000	10908930 4325560	49.3	2.52(0.00-0.00)		6294 6198	
61 Sodium 1H,					4323300		2.32(0.00-0.00)		0170	
327.00 > 307.00		1.985	0.013	1.000	2404696	49.0			53447	
6 Perfluorohex			0.0.0	1.000	2101070	17.0			00117	
313.00 > 269.00		2.024	0.019	1.000	5498841	54.9			13545	
D 7 13C2 PFHx										
315.00 > 270.00		2.024	0.019		5285090	47.9		96.7	32582	
D 9 13C4-PFHp	Α									
367.00 > 322.00	2.373	2.354	0.019		4724582	48.5		98.1	26643	
10 Perfluorohe	ptanoic a	acid								
363.00 > 319.00	2.373	2.355	0.018	1.000	5193783	53.9			10229	
8 Perfluorohex	canesulfo	onic acid								
399.00 > 80.00	2.389	2.369	0.020	1.000	7790314	48.9			6247	
D 11 1802 PFH										
403.00 > 84.00	2.389	2.369	0.020		7285290	45.4		97.0	50349	
					Daga 704 of 4	101				

 Report Date: 21-Jul-2017 11:40:39
 Chrom Revision: 2.2 26-Jun-2017 08:09:44

 Data File:
 \\ChromNa\Sacramento\ChromData\A8_N\20170720-45703.b\2017.07.20ICAL_012.d

Data File.	NOTIC	JIIINa\Sa	Стаппепі	OCHION	iDala\Ao_I\\ZU i	70720-4370	3.D\2017.07.20ICA	L_U12.u		
Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
13 Sodium 1H, 427.00 > 407.00		•		e 1.000	2231399	51.4			39874	
D 12 M2-6:2FTS 429.00 > 409.00		2.684	0.020		2377567	45.2		96.1	33694	
* 62 13C2-PFOA 415.00 > 370.00		2.703	0.022		4225024	49.5			30691	
D 14 13C4 PFO. 417.00 > 372.00	2.732		0.026		4133854	47.1		95.1	36271	
15 Perfluorooct 413.00 > 369.00 413.00 > 169.00	2.732	2.710 2.710 2.710	0.022 0.022	1.000 1.000	4683927 2838794	53.6	1.65(0.90-1.10)		805 9273	
16 Perfluorohe 449.00 > 80.00	2.740	fonic Aci 2.716	d 0.024	1.000	6549958	49.3			49873	
D 18 13C4 PFO	3.109	3.078	0.031		5354775	45.4		95.9	20147	
D 19 13C5 PFNA 468.00 > 423.00	3.109	3.080	0.029		3227838	46.6		94.1	21076	
17 Perfluorooct 499.00 > 80.00 499.00 > 99.00	3.109	onic acid 3.080 3.080	0.029 0.029	1.000 1.000	5293251 1220558	45.2	4.34(0.90-1.10)		14941 7157	
20 Perfluorono 463.00 > 419.00			0.028	1.000	3407037	52.3			6526	
22 Perfluorooct 498.00 > 78.00			0.032	1.000	8510141	52.0			17243	
D 21 13C8 FOS 506.00 > 78.00		3.422	0.032		8768935	44.7		90.2	14306	
25 Sodium 1H, 527.00 > 507.00		•	orodecar 0.026	ne 1.000	1675430	48.6			18181	
D 26 M2-8:2FTS 529.00 > 509.00		3.428	0.026		1781774	45.4		95.7	17659	
24 Perfluorode 513.00 > 469.00		cid 3.438	0.026	1.000	2793696	51.7			7569	
D 23 13C2 PFD 515.00 > 470.00		3.438	0.026		2860308	47.3		95.5	11052	
D 27 d3-NMeFO 573.00 > 419.00		3.592	0.027		1088809	49.6		100	7014	
28 N-methyl pe 570.00 > 419.00			fonami 0.019	1.000	1052866	52.7			7511	
29 Perfluorode 599.00 > 80.00		fonic aci 3.748	d 0.027	1.000	3567012	49.5			12329	
D 32 d5-NEtFOS 589.00 > 419.00		3.757	0.028		1066501	46.4		93.7	2793	
33 N-ethyl perfl 584.00 > 419.00		ane sulfo 3.766	namid 0.019	1.000	944465	51.6			6426	
31 Perfluoround 563.00 > 519.00		acid 3.766	0.019	1.000	1956055	51.0			3004	
D 30 13C2 PFUi 565.00 > 520.00		3.766	0.019		1882477 Page 732 of 1	104 ^{44.8}		90.6	7017	
					_					

Report Date: 21-Jul-2017 11:40:39
Data File: \ChromNa\Sac Chrom Revision: 2.2 26-Jun-2017 08:09:44

Data File:	\\Chr	omNa\Sa	crament	o\Chrom	Data\A8_N\201	70720-4570	3.b\2017.07.20ICAL	_012.d		
Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 34 d-N-MeFOS	SA-M									
515.00 > 169.00		3.910	0.028		2445561	48.5		98.0	831	
35 MeFOSA										
512.00 > 169.00	3.946	3.916	0.030	1.000	2361297	53.3			6667	
37 Perfluorodoo	decanoid	c acid								
613.00 > 569.00	4.081	4.059	0.022	1.000	1986401	53.3			1932	
D 36 13C2 PFD										
615.00 > 570.00	4.081	4.059	0.022		1952442	44.8		90.5	4378	
D 38 d-N-EtFOS										
531.00 > 169.00	4.124	4.095	0.029		2437387	47.9		96.7	4656	
39 N-ethylperflu										
526.00 > 169.00			0.029	1.000	2514909	55.1			5869	
41 Perfluorotrid										
663.00 > 619.00		4.328	0.017	1.000	1844812	55.0			885	
D 43 13C2-PFT										
715.00 > 670.00		4.566	0.018		3668208	45.1		91.1	10144	
42 Perfluorotetr										
712.50 > 668.90		4.567	0.017	1.000	3913682	51.0	7 00/0 00 0 00)		385	
713.00 > 169.00		4.567	0.005	0.998	551630		7.09(0.00-0.00)		4621	
D 44 13C2-PFH		4.077	0.011		1050410	47.1		02.2	27.40	
815.00 > 770.00		4.976	0.011		1959412	46.1		93.2	3648	
45 Perfluorohex			0.000	1 000	1000050	F2.0			200	
813.00 > 769.00		4.979	0.008	1.000	1802859	53.0			298	
46 Perfluorooct			0.005	1 000	1700/05	F1 4			, 0.5	
913.00 > 869.00	5.326	5.321	0.005	1.000	1782635	51.4			685	
QC Flag Leg										

Processing Flags
NC - Not Calibrated

Reagents:

LCPFCIC_FULL_00003 Amount Added: 1.00 Units: mL

Report Date: 21-Jul-2017 11:40:39 Chrom Revision: 2.2 26-Jun-2017 08:09:44 TestAmerica Sacramento Data File: **Injection Date:** 20-Jul-2017 18:18:05 Instrument ID: A8_N Lims ID: ICV Full Client ID: Operator ID: SACINSTLCMS01 ALS Bottle#: 36 Worklist Smp#: 12 Injection Vol: 2.0 ul Dil. Factor: 1.0000 Method: Limit Group: LC PFC_DOD ICAL $A8_N$ D 113C4 PFBA 2 Perfluorobutyric acid D 313C5-PFPeA Exp1:m/z 212.90 > 169.00:Moving5PtAverage_x | Exp1:m/z 267.90 > 223.00:Moving5PtAverage_x Exp1:m/z 217.00 > 172.00:Moving5PtAverage_> 00024 00024 X20 042 0036 (000001X)²⁴ ×30 ≻₂₄-**≻**16′ 18 12 18 12 12 1.3 1.1 1.4 1.7 2.0 2.3 0.8 1.1 1.4 2.0 2.3 1.0 1.6 1.9 2.2 2.5 5 Perfluorobutanesulfonic acid 5 Perfluorobutanesulfonic acid 4 Perfluoropentanoic acid ____ Exp1:m/z 262.90 > 219.00:Moving5PtAverage_x 321 Exp1:m/z 298.90 > 80.00:Moving5PtAverage x3 Exp1:m/z 298.90 > 99.00:Moving5PtAverage_x3 (49⁻ 00042⁻ 1235⁻ (21° 00018° ×15° ©28 0024 -28 21 2.5 1.3 1.9 2.2 2.5 1.0 1.3 1.9 2.2 1.3 2.5 1.6 1.0 1.6 1.9 2.2 61 Sodium 1H,1H,2H,2H-perfluorohexan Perfluorohexanoic acid 7 13C2 PFHxA Exp1:m/z 327.00 > 307.00:Moving5PtAverage_x | Exp1:m/z 313.00 > 269.00:Moving5PtAverage_x Exp1:m/z 315.00 > 270.00:Moving5PtAverage_> (00001 00020 (24⁻ 00020 X (X100000) ∑₁₆-∑₁₆-0.9 1.5 2.1 2.7 2.2 2.8 1.5 1.8 2.1 1.0 1.6 2.4 2.7 8 Perfluorohexanesulfonic acid 9 13C4-PFHpA 10 Perfluoroheptanoic acid Exp1:m/z 367.00 > 322.00:Moving5PtAverage_x Exp1:m/z 363.00 > 319.00:Moving5PtAverage_x Exp1:m/z 399.00 > 80.00:Moving5PtAverage_x3 (21-000018-15-618 600015 030 000 25 \sum_{12} 10 0 0 1.9 2.2 2.5 2.8 1.9 2.2 2.5 2.8 3.1 1.6 1.6 1.6

D 11 1802 PFHxS 13 Sodium 1H,1H,2H,2H-perfluoroocta De 12 M2-6:2FTS Exp1:m/z 403.00 > 84.00:Moving5PtAverage_x3 Exp1:m/z 427.00 > 407.00:Moving5PtAverage_x Exp1:m/z 429.00 > 409.00:Moving5PtAverage_x Y (X100000) Y (X100000) 030° 0025° ∑₂₀ 15 10 2.9 2.9 1.3 1.9 2.5 3.1 1.7 2.3 3.5 2.0 2.3 2.6 3.2 62 13C2-PFOA D 14 13C4 PFOA 15 Perfluorooctanoic acid Exp1:m/z 417.00 > 372.00:Moving5PtAverage_x Exp1:m/z 415.00 > 370.00:Moving5PtAverage_> Exp1:m/z 413.00 > 369.00:Moving5PtAverage_> (0000015⁻ X) > 9 (0000015 X) (0000015⁻ 12⁻ > 9 0 2.9 2.8 2.3 2.6 3.2 2.2 2.5 2.5 2.8 3.1 3.1 Min 15 Perfluorooctanoic acid 16 Perfluoroheptanesulfonic Acid D 18 13C4 PFOS Exp1:m/z 413.00 > 169.00:Moving5PtAverage_x Exp1:m/z 449.00 > 80.00:Moving5PtAverage_x3 Exp1:m/z 503.00 > 80.00:Moving5PtAverage_x3 000024 20000 20 (21°000018° ×15° ×16 12 2.4 2.7 3.0 3.3 2.2 2.8 2.6 2.9 3.5 3.8 2.1 1.6 3.4 2.3 3.2 D 19 13C5 PFNA 17 Perfluorooctane sulfonic acid 17 Perfluorooctane sulfonic acid Exp1:m/z 468.00 > 423.00:Moving5PtAverage_x Exp1:m/z 499.00 > 80.00:Moving5PtAverage_x3 Exp1:m/z 499.00 > 99.00:Moving5PtAverage_x3 (21-000018-X15-49 (000001X) X 0042 ×35 ≻28 21 14 0 0 2.9 3.0 4.2 3.9 2.3 2.6 3.2 3.5 3.8 1.8 2.4 3.6 2.1 2.7 3.3

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170720-45703.b\2017.07.20ICAL_012.d 20 Perfluorononanoic acid 22 Perfluorooctane Sulfonamide D 21 13C8 FOSA Exp1:m/z 463.00 > 419.00:Moving5PtAverage_x Exp1:m/z 498.00 > 78.00:Moving5PtAverage_x3 Exp1:m/z 506.00 > 78.00:Moving5PtAverage_x3 (X100000) X (X1000000) X 635 630 30 00030 0025 X ×25 **≻**20 15 15 10 10 0 3.7 3.9 2.3 2.6 2.9 3.2 3.5 2.5 3.1 4.3 2.7 3.0 3.3 3.6 25 Sodium 1H,1H,2H,2H-perfluorodecaDe26 M2-8:2FTS 24 Perfluorodecanoic acid Exp1:m/z 513.00 > 469.00:Moving5PtAverage_> (X100000) 8 6 656 648 Σ_{40} ×45 ≻₃₆-27 24 18 16 0 3.4 4.0 3.7 4.0 3.0 3.1 3.7 3.1 3.3 3.6 3.9 D 23 13C2 PFDA D 27 d3-NMeFOSAA 28 N-methyl perfluorooctane sulfonami Exp1:m/z 573.00 > 419.00:Moving5PtAverage_> Exp1:m/z 515.00 > 470.00:Moving5PtAverage_> Exp1:m/z 570.00 > 419.00:Moving5PtAverage_x (0000010° (0000010° (0000010°) 42 642 642 642 642 ×30-**28** 21 18 14 12 0 3.0 3.3 3.6 3.9 3.7 4.0 4.3 2.9 3.2 3.5 3.8 2.7 2.8 3.1 3.4 4.1 4.4 29 Perfluorodecane Sulfonic acid D 32 d5-NEtFOSAA 33 N-ethyl perfluorooctane sulfonamid Exp1:m/z 599.00 > 80.00:Moving5PtAverage_x3 Exp1:m/z 589.00 > 419.00:Moving5PtAverage_x Exp1:m/z 584.00 > 419.00:Moving5PtAverage_x (0000012 (X10000012) (X10000012) 642 6036 0030<u>-</u> \times 30 **≻**24 18 18 12 12 0 3.0 3.3 3.6 3.9 4.2 4.5 3.4 4.0 4.3 3.4 4.0 4.3 3.1 3.1

Chrom Revision: 2.2 26-Jun-2017 08:09:44

Report Date: 21-Jul-2017 11:40:39

Chrom Revision: 2.2 26-Jun-2017 08:09:44

Report Date: 21-Jul-2017 11:40:39

Report Date: 21-Jul-2017 11:40:39 Chrom Revision: 2.2 26-Jun-2017 08:09:44 Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170720-45703.b\2017.07.20ICAL_012.d

45 Perfluorohexadecanoic acid D 44 13C2-PFHxDA 46 Perfluorooctadecanoic acid Exp1:m/z 815.00 > 770.00:Moving5PtAverage_x Exp1:m/z 813.00 > 769.00:Moving5PtAverage_x Exp1:m/z 913.00 > 869.00:Moving5PtAverage_x 77 (00001X) (70-(0060-(×50-0066 X) ≻48- ≻₄₀ -44 33 36**-**30 22 24 20 11 12 10 0 0 0 5.3 4.7 5.0 5.3 5.6 4.3 4.6 4.9 5.2 5.5 4.7 5.0 5.6 5.9 4.4

FORM VII LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-29732-1

SDG No.:

Lab Sample ID: CCVL 320-175391/2 Calibration Date: 07/21/2017 11:54

Instrument ID: A8_N Calib Start Date: 07/20/2017 17:15

GC Column: GeminiC18 3×100 ID: 3.00 (mm) Calib End Date: 07/20/2017 18:04

Lab File ID: 2017.07.21A_005.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanoic acid (PFBA)	AveID	0.9107	0.8995		0.988	1.00	-1.2	50.0
Perfluoropentanoic acid (PFPeA)	AveID	0.997	1.133		1.14	1.00	13.6	50.0
Perfluorobutanesulfonic acid (PFBS)	AveID	1.422	1.364		0.848	0.884	-4.0	50.0
Perfluorohexanoic acid (PFHxA)	AveID	0.9374	1.007		1.07	1.00	7.4	50.0
Perfluoroheptanoic acid (PFHpA)	AveID	1.009	1.046		1.04	1.00	3.7	50.0
Perfluorohexanesulfonic acid (PFHxS)	AveID	1.023	1.141		1.01	0.910	11.5	50.0
6:2FTS	AveID	0.8582	0.9025		0.997	0.948	5.2	50.0
Perfluorooctanoic acid (PFOA)	AveID	1.046	1.063		1.02	1.00	1.6	50.0
Perfluoroheptanesulfonic Acid (PFHpS)	AveID	1.174	1.187		0.962	0.952	1.1	50.0
Perfluorononanoic acid (PFNA)	AveID	1.000	0.9449		0.945	1.00	-5.5	50.0
Perfluorooctanesulfonic acid (PFOS)	AveID	1.034	1.053		0.945	0.928	1.8	50.0
8:2FTS	AveID	0.9182	1.018		1.06	0.958	10.8	50.0
Perfluorodecanoic acid (PFDA)	AveID	0.9359	0.9908		1.06	1.00	5.9	50.0
Perfluorooctane Sulfonamide (FOSA)	AveID	0.9235	0.9134		0.989	1.00	-1.1	50.0
N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA)	AveID	0.9079	0.8950		0.986	1.00	-1.4	50.0
Perfluorodecanesulfonic acid (PFDS)	AveID	0.6369	0.6395		0.968	0.964	0.4	50.0
N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)	AveID	0.8499	0.7960		0.937	1.00	-6.3	50.0
Perfluoroundecanoic acid (PFUnA)	L2ID		1.062		0.872	1.00	-12.8	50.0
MeFOSA	AveID	0.8961	0.8927		0.996	1.00	-0.4	50.0
Perfluorododecanoic acid (PFDoA)	AveID	0.9442	1.001		1.06	1.00	6.0	50.0
N-EtFOSA-M	AveID	0.9273	0.8998		0.970	1.00	-3.0	50.0
Perfluorotridecanoic Acid (PFTriA)	AveID	0.8512	0.8216		0.965	1.00	-3.5	50.0
Perfluorotetradecanoic acid (PFTeA)	AveID	1.947	2.245		1.15	1.00	15.3	50.0
Perfluoro-n-hexadecanoic acid (PFHxDA)	L2ID		1.269		0.741	1.00	-25.9	50.0
Perfluoro-n-octadecanoic acid (PFODA)	AveID	0.8788	0.6894		0.784	1.00	-21.6	50.0
13C4 PFBA	Ave	179976	182006		50.6	50.0	1.1	50.0
13C5 PFPeA	Ave	119573	130340		54.5	50.0	9.0	50.0
13C2 PFHxA	Ave	110403	120169		54.4	50.0	8.8	50.0
13C4-PFHpA	Ave	97315	116627		59.9	50.0	19.8	50.0
1802 PFHxS	Ave	160345	175831		51.9	47.3	9.7	50.0
M2-6:2FTS	Ave	52582	56274	·	50.8	47.5	7.0	50.0

FORM VII LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-29732-1

SDG No.:

Lab Sample ID: <u>CCVL 320-175391/2</u> Calibration Date: <u>07/21/2017 11:54</u>

Instrument ID: A8_N Calib Start Date: 07/20/2017 17:15

GC Column: GeminiC18 3×100 ID: 3.00 (mm) Calib End Date: 07/20/2017 18:04

Lab File ID: 2017.07.21A_005.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE CF	CF	MIN CF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
13C4 PFOA	Ave	87797	106007		60.4	50.0	20.7	50.0
13C4 PFOS	Ave	118039	121001		49.0	47.8	2.5	50.0
13C5 PFNA	Ave	69282	84924		61.3	50.0	22.6	50.0
M2-8:2FTS	Ave	39250	43515		53.1	47.9	10.9	50.0
13C2 PFDA	Ave	60512	71626		59.2	50.0	18.4	50.0
13C8 FOSA	Ave	196294	206709		52.7	50.0	5.3	50.0
d3-NMeFOSAA	Ave	21953	26451		60.2	50.0	20.5	50.0
13C2 PFUnA	Ave	41991	54054		64.4	50.0	28.7	50.0
d5-NEtFOSAA	Ave	22991	27935		60.8	50.0	21.5	50.0
d-N-MeFOSA-M	Ave	50429	49501		49.1	50.0	-1.8	50.0
13C2 PFDoA	Ave	43561	50612		58.1	50.0	16.2	50.0
d-N-EtFOSA-M	Ave	50912	48873		48.0	50.0	-4.0	50.0
13C2-PFTeDA	Ave	81327	95625		58.8	50.0	17.6	50.0
13C2-PFHxDA	Ave	42486	43502		51.2	50.0	2.4	50.0

Report Date: 21-Jul-2017 13:58:57 Chrom Revision: 2.2 26-Jun-2017 08:09:44

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170721-45739.b\2017.07.21A_005.d

Lims ID: CCVL

Client ID:

Sample Type: CCVL

Inject. Date: 21-Jul-2017 11:54:04 ALS Bottle#: 29 Worklist Smp#: 2

Injection Vol: 2.0 ul Dil. Factor: 1.0000

Sample Info: CCV L2

Misc. Info.: Plate: 1 Rack: 1

Operator ID: SACINSTLCMS01 Instrument ID: A8_N

Sublist: chrom-A8_N*sub18

Method: \ChromNa\Sacramento\ChromData\A8_N\20170721-45739.b\A8_N.m

Limit Group: LC PFC_DOD ICAL

Last Update: 21-Jul-2017 13:58:57 Calib Date: 20-Jul-2017 18:04:17

Integrator: Picker

Quant Method: Isotopic Dilution Quant By: Initial Calibration

Last ICal File: \ChromNA\Sacramento\ChromData\A8_N\20170720-45703.b\2017.07.20ICAL_010.d

Column 1: Det: EXP1

Process Host: XAWRK007

First Level Reviewer: chandrasenas Date: 21-Jul-2017 13:54:37

First Level Reviewer, Charluraserias					Date.		1-Jui-2017 13.54.57			
Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 113C4 PFBA	١									
217.00 > 172.00	1.534	1.521	0.013		9100308	50.6		101	36152	
2 Perfluorobut	,									
212.90 > 169.00		1.530	0.004	1.000	163715	0.9877		98.8	98.0	
4 Perfluoroper 262.90 > 219.00		cid 1.720	0.014	1.000	147687	1.14		114	91.4	
D 3 13C5-PFP6		1.720	0.014	1.000	147087	1.14		114	91.4	
267.90 > 223.00		1.720	0.014		6517020	54.5		109	61166	
5 Perfluorobut										
	1.761	1.747	0.014	1.000	212076	0.8484		96.0	176	
298.90 > 99.00	1.761	1.747	0.014	1.000	83568		2.54(0.00-0.00)		176	
D 47 13C3-PFB		4 7 47	0.005		150101	NO				
301.90 > 83.00		1.747	0.005		159121	NC			6403	
61 Sodium 1H, 327.00 > 307.00		H-perflu 1.952	orohexar 0.006	ne 1.000	52965	0.9703		104	3594	
6 Perfluorohex			0.000	1.000	32703	0.7703		104	3374	
313.00 > 269.00		1.986	0.006	1.000	120958	1.07		107	302	
D 7 13C2 PFHx	κA									
315.00 > 270.00	1.992	1.986	0.006		6008426	54.4		109	37667	
10 Perfluorohe	•									
363.00 > 319.00		2.305	0.009	1.000	122023	1.04		104	330	
D 9 13C4-PFHp		0.005	0.000		5004074	F0.0		100	00540	
367.00 > 322.00		2.305	0.009		5831374	59.9		120	28513	
8 Perfluorohex 399.00 > 80.00		onic acid 2.321	0.009	1.000	182517	1.01		111	231	
D 11 18O2 PFH		2.021	5.007	1.000	102317	1.01			201	
	2.330	2.321	0.009		8316790	51.9		110	32438	
					Do === 744 of 4	101				

Report Date: 21-Jul-2017 13:58:57 Chrom Revision: 2.2 26-Jun-2017 08:09:44

Data File:				o\Chrom			26-Jun-2017 08:09 9.b\2017.07.21A_0			
Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
13 Sodium 1H, 427.00 > 407.00	2.638	H-perflu 2.630		e 1.000	48144	1.00		105	1637	
D 12 M2-6:2FTS 429.00 > 409.00	2.638	2.630	0.008		2672998	50.8		107	31529	
15 Perfluorooc 413.00 > 369.00 413.00 > 169.00 * 62 13C2-PFO	2.667 2.667	2.651 2.651	0.015 0.015	1.000 1.000	112677 66919	1.02	1.68(0.90-1.10)	102	23.8 416	
415.00 > 370.00 D 14 13C4 PFO	2.659	2.651	0.008		5296324	50.0		100	28592	
417.00 > 372.00	2.667	2.651	0.015		5300361	60.4		121	30348	
16 Perfluorohe 449.00 > 80.00	2.674	2.658	id 0.016	1.000	136677	0.9624		101	3746	
20 Perfluorono 463.00 > 419.00		cid 3.021	0.010	1.000	80247	0.9449		94.5	177	
17 Perfluorooc 499.00 > 80.00 499.00 > 99.00	3.031 3.031	onic acid 3.021 3.021	0.010 0.010	1.000 1.000	118192 23893	0.9446	4.95(0.90-1.10)	102	1611 312	
D 18 13C4 PFO 503.00 > 80.00	3.031	3.021	0.010		5783825	49.0		103	28289	
D 19 13C5 PFN 468.00 > 423.00		3.021	0.010		4246207	61.3		123	22222	
25 Sodium 1H, 527.00 > 507.00		H-perflu 3.371		ne 1.000	42422	1.06		111	1723	
D 26 M2-8:2FTS 529.00 > 509.00		3.371	0.009		2084367	53.1		111	25076	
22 Perfluorooc 498.00 > 78.00				1.000	188815	0.9891		98.9	5078	
24 Perfluorode 513.00 > 469.00	3.396	cid 3.379	0.017	1.000	70965	1.06		106	282	
D 23 13C2 PFD 515.00 > 470.00		3.379	0.017		3581323	59.2		118	13363	
D 21 13C8 FOS 506.00 > 78.00		3.379	0.017		10335463	52.7		105	46564	
D 27 d3-NMeFC 573.00 > 419.00		3.530	0.022		1322558	60.2		120	9763	
28 N-methyl pe 570.00 > 419.00				1.000	23674	0.9858		98.6	203	
29 Perfluorode 599.00 > 80.00	cane Su	lfonic ac		1.000	74588	0.9679		100	3359	
D 32 d5-NEtFO: 589.00 > 419.00	SAA	3.696	0.022	1.000	1396769	60.8		122	3198	
31 Perfluoroun 563.00 > 519.00	decanoi		0.012	1.000	57414	0.8722		87.2	126	
33 N-ethyl perf 584.00 > 419.00			namid 0.012	1.000	22236	0.9365		93.7	533	
D 30 13C2 PFU 565.00 > 520.00	nA	3.706	0.012		Page 7425 of 1			129	13205	

Report Date: 21-Jul-2017 13:58:57 Chrom Revision: 2.2 26-Jun-2017 08:09:44 Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170721-45739.b\2017.07.21A_005.d

Data File:	NChro	miva\Sa	icrament	OCHROM	Data(A8_N\201	10121-4513	9.b\2017.07.21A_00	J5.a		
Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
Signal	ΚI	KI	KI	KI	Response	Hg/IIII	Ralio(Limits)	70 Rec	3/11	riays
35 MeFOSA										
512.00 > 169.00	3.903	3.883	0.020	1.000	44190	1.00		99.6	1651	
D 34 d-N-MeFOS	SA-M									
515.00 > 169.00	3.894	3.883	0.011		2475025	49.1		98.2	1599	
37 Perfluorodoc		acid								
613.00 > 569.00		4.001	0.016	1.000	50655	1.06		106	59.9	
D 36 13C2 PFDo										
615.00 > 570.00		4.001	0.016		2530594	58.1		116	5895	
D 38 d-N-EtFOS		40//	0.04.4		0440470	40.0		0/ 0		
531.00 > 169.00		4.066	0.014		2443673	48.0		96.0	6029	
39 N-ethylperflu				1 000	42070	0.0704		07.0	15/0	
526.00 > 169.00		4.075	0.013	1.000	43978	0.9704		97.0	1562	
41 Perfluorotride 663.00 > 619.00			0.012	1.000	41583	0.9652		96.5	11.4	
			0.012	1.000	41303	0.7032		70.5	11.4	
42 Perfluorotetr 712.50 > 668.90		4.502	0.014	1.000	113626	1.15		115	37.1	
713.00 > 169.00		4.502	0.005	0.998	13809	1.15	8.23(0.00-0.00)	113	450	
D 43 13C2-PFTe	:DA						,			
715.00 > 670.00		4.502	0.014		4781238	58.8		118	14024	
D 44 13C2-PFHx	ďΑ									
815.00 > 770.00	4.929	4.902	0.027		2175087	51.2		102	3468	
45 Perfluorohex	kadecan	oic acid								
813.00 > 769.00	4.929	4.912	0.017	1.000	64224	0.7414		74.1	9.2	
46 Perfluoroocta	adecano	oic acid								
913.00 > 869.00	5.263	5.246	0.017	1.000	34890	0.7845		78.4	13.4	
	o m d									

OC Flag Legend Processing Flags

NC - Not Calibrated

Reagents:

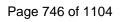
LCPFC_FULL-L2_00004 Amount Added: 1.00 Units: mL

Report Date: 21-Jul-2017 13:58:58 Chrom Revision: 2.2 26-Jun-2017 08:09:44 TestAmerica Sacramento Data File: **Injection Date:** 21-Jul-2017 11:54:04 Instrument ID: A8_N Lims ID: **CCVL** Client ID: Operator ID: SACINSTLCMS01 ALS Bottle#: 29 Worklist Smp#: 2 Injection Vol: 2.0 ul Dil. Factor: 1.0000 Method: Limit Group: LC PFC_DOD ICAL $A8_N$ D 113C4 PFBA 2 Perfluorobutyric acid 4 Perfluoropentanoic acid Exp1:m/z 217.00 > 172.00:Moving5PtAverage_x Exp1:m/z 212.90 > 169.00:Moving5PtAverage_x Exp1:m/z 262.90 > 219.00:Moving5PtAverage_x 84 ©42 0036 672 260 260 666 666 ∑30 $\stackrel{-}{\times}_{55}$ ×48 36 18 33 24 22 12 12 1.7 2.0 1.4 1.7 2.0 1.5 1.8 2.1 5 Perfluorobutanesulfonic acid 3 13C5-PFPeA 5 Perfluorobutanesulfonic acid D Exp1:m/z 267.90 > 223.00:Moving5PtAverage_x Exp1:m/z 298.90 > 80.00:Moving5PtAverage_x3 Exp1:m/z 298.90 > 99.00:Moving5PtAverage_x3 V (X10000) 42 ×30 036 ∑₂₀ 15 18 10 12 1.2 1.5 1.8 2.1 1.2 1.5 1.8 2.4 1.5 2.1 1.2 1.8 2.1 61 Sodium 1H,1H,2H,2H-perfluorohexan Perfluorohexanoic acid 7 13C2 PFHxA Exp1:m/z 327.00 > 307.00:Moving5PtAverage_x | Exp1:m/z 313.00 > 269.00:Moving5PtAverage_x Exp1:m/z 315.00 > 270.00:Moving5PtAverage_x 281 56 0024 00020 × 648 00 140 140 Ç₃₂ 16 12 24 16 1.9 2.5 1.7 2.0 2.3 2.6 1.5 1.8 2.1 2.7 1.3 1.6 2.2 1.4 2.4 8 Perfluorohexanesulfonic acid 10 Perfluoroheptanoic acid 9 13C4-PFHpA Exp1:m/z 363.00 > 319.00:Moving5PtAverage_x Exp1:m/z 367.00 > 322.00:Moving5PtAverage_x Exp1:m/z 399.00 > 80.00:Moving5PtAverage_x3 (24⁻ 00020 **6**42 <u>6</u>54 ∑₁₆ ×35 ×45 ≻28 ≻₃₆-12 21 27 18 0 0 2.0 2.3 2.6 2.9 1.9 Page 744irof 1104 2.8 1.8 2.1 2.4 2.7 3.0 1.7 1.6 1.5

Report Date: 21-Jul-2017 13:58:58 Chrom Revision: 2.2 26-Jun-2017 08:09:44 Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170721-45739.b\2017.07.21A_005.d D 11 1802 PFHxS 13 Sodium 1H,1H,2H,2H-perfluoroocta De 12 M2-6:2FTS Exp1:m/z 403.00 > 84.00:Moving5PtAverage_x3 Exp1:m/z 427.00 > 407.00:Moving5PtAverage_x Exp1:m/z 429.00 > 409.00:Moving5PtAverage_x (X100000) (X100000) 8 (00030 1×25 0018-15-≻20 15 10 0 2.3 2.6 2.9 2.7 2.6 2.9 1.7 2.0 2.1 2.4 3.0 2.0 2.3 3.2 15 Perfluorooctanoic acid 15 Perfluorooctanoic acid 62 13C2-PFOA Exp1:m/z 413.00 > 369.00:Moving5PtAverage_x 28 56 (21⁻ (00018-(215-0024 20 × 16 048 0048 ×40 _32 12 24 16 2.6 2.9 2.5 2.3 2.9 3.2 2.2 2.8 Min D 14 13C4 PFOA 16 Perfluoroheptanesulfonic Acid 20 Perfluorononanoic acid Exp1:m/z 463.00 > 419.00:Moving5PtAverage_> Exp1:m/z 449.00 > 80.00:Moving5PtAverage_x3 64**1** Exp1:m/z 417.00 > 372.00:Moving5PtAverage_x (000020 X16 656 648 6³⁰ 6₂₅ ×40-20 32 15 24 10 16- 0 0 2.3 2.6 2.9 3.2 2.2 2.5 2.8 2.9 3.2 2.0 3.5 2.6 D 18 13C4 PFOS 17 Perfluorooctane sulfonic acid 17 Perfluorooctane sulfonic acid Exp1:m/z 499.00 > 99.00:Moving5PtAverage_x3 Exp1:m/z 503.00 > 80.00:Moving5PtAverage_x3

Exp1:m/z 499.00 > 80.00:Moving5PtAverage_x3 (24⁻ 000 20-84 930 Σ_{25} ∑ ≻48 ≻₂₀ 12 36 15 24 10 12 0 1.9 2.5 3.1 3.7 2.2 2.5 2.8 3.1 3.4 3.7 2.4 2.7 3.0 3.3 3.6

Report Date: 21-Jul-2017 13:58:58 Chrom Revision: 2.2 26-Jun-2017 08:09:44 Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170721-45739.b\2017.07.21A_005.d D 19 13C5 PFNA 25 Sodium 1H,1H,2H,2H-perfluorodecabe26 M2-8:2FTS Exp1:m/z 468.00 > 423.00:Moving5PtAverage_x (0000015) X (1200000) X (00015 X) > 9 ×55 33 22 11 2.7 3.0 3.3 3.9 2.4 3.3 3.6 2.9 3.2 3.5 3.8 2.7 3.0 3.6 22 Perfluorooctane Sulfonamide 24 Perfluorodecanoic acid D 23 13C2 PFDA Exp1:m/z 498.00 > 78.00:Moving5PtAverage_x3 Exp1:m/z 513.00 > 469.00:Moving5PtAverage_x Exp1:m/z 515.00 > 470.00:Moving5PtAverage_> 77 28 866 <u>8</u>24 ∑55 ×20 ≻16- 33 22 11 3.4 3.7 3.4 3.7 2.9 3.2 3.5 3.1 3.1 D 21 13C8 FOSA D 27 d3-NMeFOSAA 28 N-methyl perfluorooctane sulfonami Exp1:m/z 570.00 > 419.00:Moving5PtAverage_x Exp1:m/z 506.00 > 78.00:Moving5PtAverage_x3 Exp1:m/z 573.00 > 419.00:Moving5PtAverage_> 56**-**00036 × × × 24 0048 ×40 Y (X1000) >32 18 24 12 16 0 3.0 3.6 4.2 3.3 4.2 3.0 3.3 3.9 2.4 3.0 3.6 3.9 2.7 3.6 29 Perfluorodecane Sulfonic acid D 32 d5-NEtFOSAA 31 Perfluoroundecanoic acid Exp1:m/z 599.00 > 80.00:Moving5PtAverage_x3 Exp1:m/z 589.00 > 419.00:Moving5PtAverage_x Exp1:m/z 563.00 > 519.00:Moving5PtAverage_) 35 656 600 48 <u>@</u>30 <u>0</u>18 ×25- ×40 ≻20 ≻₃₂-



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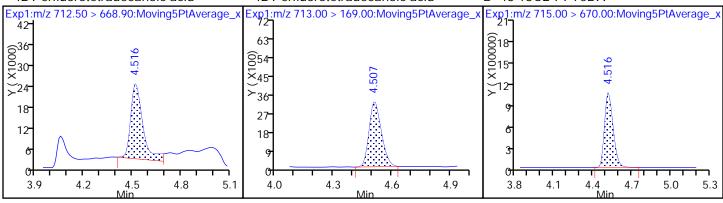
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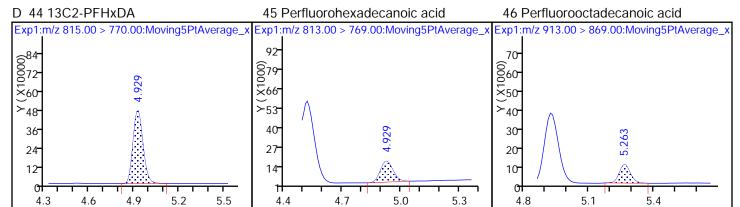
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Report Date: 21-Jul-2017 13:58:58 Chrom Revision: 2.2 26-Jun-2017 08:09:44

Data File: \ChromNa\Sacramento\ChromData\A8_N\20170721-45739.b\2017.07.21A_005.d



FORM VII LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-29732-1

SDG No.:

Lab Sample ID: CCV 320-175462/1 Calibration Date: 07/21/2017 20:38

Instrument ID: A8_N Calib Start Date: 07/20/2017 17:15

GC Column: GeminiC18 3×100 ID: 3.00 (mm) Calib End Date: 07/20/2017 18:04

Lab File ID: 2017.07.21C_015.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanoic acid (PFBA)	AveID	0.9107	0.9526		20.9	20.0	4.6	25.0
Perfluoropentanoic acid (PFPeA)	AveID	0.997	1.054		21.1	20.0	5.7	25.0
Perfluorobutanesulfonic acid (PFBS)	AveID	1.422	1.300		16.2	17.7	-8.5	25.0
Perfluorohexanoic acid (PFHxA)	AveID	0.9374	0.9252		19.7	20.0	-1.3	25.0
Perfluoroheptanoic acid (PFHpA)	AveID	1.009	1.021		20.2	20.0	1.1	25.0
Perfluorohexanesulfonic acid (PFHxS)	AveID	1.023	0.9749		17.3	18.2	-4.7	25.0
6:2FTS	AveID	0.8582	0.9087		20.1	19.0	5.9	25.0
Perfluorooctanoic acid (PFOA)	AveID	1.046	1.091		20.8	20.0	4.2	25.0
Perfluoroheptanesulfonic Acid (PFHpS)	AveID	1.174	1.287		20.9	19.0	9.7	25.0
Perfluorononanoic acid (PFNA)	AveID	1.000	0.9938		19.9	20.0	-0.6	25.0
Perfluorooctanesulfonic acid (PFOS)	AveID	1.034	1.053		18.9	18.6	1.8	25.0
8:2FTS	AveID	0.9182	0.9223		19.2	19.2	0.4	25.0
Perfluorodecanoic acid (PFDA)	AveID	0.9359	1.023		21.9	20.0	9.3	25.0
Perfluorooctane Sulfonamide (FOSA)	AveID	0.9235	0.9545		20.7	20.0	3.4	25.0
N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA)	AveID	0.9079	0.9137		20.1	20.0	0.6	25.0
Perfluorodecanesulfonic acid (PFDS)	AveID	0.6369	0.6186		18.7	19.3	-2.9	25.0
N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)	AveID	0.8499	0.8808		20.7	20.0	3.6	25.0
Perfluoroundecanoic acid (PFUnA)	L2ID		1.027		20.2	20.0	1.2	25.0
MeFOSA	AveID	0.8961	0.9008		20.1	20.0	0.5	25.0
Perfluorododecanoic acid (PFDoA)	AveID	0.9442	0.9247		19.6	20.0	-2.1	25.0
N-EtFOSA-M	AveID	0.9273	0.9532		20.6	20.0	2.8	25.0
Perfluorotridecanoic Acid (PFTriA)	AveID	0.8512	0.8799		20.7	20.0	3.4	25.0
Perfluorotetradecanoic acid (PFTeA)	AveID	1.947	1.852		19.0	20.0	-4.8	25.0
Perfluoro-n-hexadecanoic acid (PFHxDA)	L2ID		0.8395		19.0	20.0	-5.0	25.0
Perfluoro-n-octadecanoic acid (PFODA)	AveID	0.8788	0.8346		19.0	20.0	-5.0	25.0
13C4 PFBA	Ave	179976	185474		51.5	50.0	3.1	50.0
13C5 PFPeA	Ave	119573	129031		54.0	50.0	7.9	50.0
13C2 PFHxA	Ave	110403	121342		55.0	50.0	9.9	50.0
13C4-PFHpA	Ave	97315	114235		58.7	50.0	17.4	50.0
1802 PFHxS	Ave	160345	172889		51.0	47.3	7.8	50.0
M2-6:2FTS	Ave	52582	55336		50.0	47.5	5.2	50.0

FORM VII LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-29732-1

SDG No.:

Lab Sample ID: <u>CCV 320-175462/1</u> Calibration Date: <u>07/21/2017 20:38</u>

Instrument ID: A8_N Calib Start Date: 07/20/2017 17:15

GC Column: GeminiC18 3×100 ID: 3.00 (mm) Calib End Date: 07/20/2017 18:04

Lab File ID: 2017.07.21C_015.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE CF	CF	MIN CF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
13C4 PFOA	Ave	87797	96890		55.2	50.0	10.4	50.0
13C4 PFOS	Ave	118039	117088		47.4	47.8	-0.8	50.0
13C5 PFNA	Ave	69282	77579		56.0	50.0	12.0	50.0
M2-8:2FTS	Ave	39250	39760		48.5	47.9	1.3	50.0
13C2 PFDA	Ave	60512	59881		49.5	50.0	-1.0	50.0
13C8 FOSA	Ave	196294	197802		50.4	50.0	0.8	50.0
d3-NMeFOSAA	Ave	21953	22025		50.2	50.0	0.3	50.0
d5-NEtFOSAA	Ave	22991	23045		50.1	50.0	0.2	50.0
13C2 PFUnA	Ave	41991	46415		55.3	50.0	10.5	50.0
d-N-MeFOSA-M	Ave	50429	50148		49.7	50.0	-0.6	50.0
13C2 PFDoA	Ave	43561	45612		52.4	50.0	4.7	50.0
d-N-EtFOSA-M	Ave	50912	49676		48.8	50.0	-2.4	50.0
13C2-PFTeDA	Ave	81327	85439		52.5	50.0	5.1	50.0
13C2-PFHxDA	Ave	42486	41938		49.4	50.0	-1.3	50.0

Report Date: 25-Jul-2017 10:40:51 Chrom Revision: 2.2 26-Jun-2017 08:09:44

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170722-45761.b\2017.07.21C_015.d

Lims ID: CCV L4

Client ID:

Sample Type: CCV

Inject. Date: 21-Jul-2017 20:38:31 ALS Bottle#: 31 Worklist Smp#: 1

Injection Vol: 2.0 ul Dil. Factor: 1.0000

Sample Info: CCV L4

Misc. Info.: Plate: 1 Rack: 1

Operator ID: SACINSTLCMS01 Instrument ID: A8_N

Sublist: chrom-A8_N*sub18

Method: \ChromNa\Sacramento\ChromData\A8_N\20170722-45761.b\A8_N.m

Limit Group: LC PFC_DOD ICAL

Last Update: 25-Jul-2017 10:40:51 Calib Date: 20-Jul-2017 18:04:17

Integrator: Picker

Quant Method: Isotopic Dilution Quant By: Initial Calibration

Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20170720-45703.b\2017.07.20ICAL_010.d

Column 1: Det: EXP1

Process Host: XAWRK029

First Level Reviewer: chandrasenas Date: 24-Jul-2017 16:03:39

First Level Revie	riisi Levei Reviewei. Chanurasenas						24-Jul-2017 10.03.39			
Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 113C4 PFBA	١									
217.00 > 172.00	1.536	1.537	-0.001		9273712	51.5		103	30368	
2 Perfluorobut										
212.90 > 169.00		1.537	-0.001	1.000	3533510	20.9		105	2204	
D 3 13C5-PFP6 267.90 > 223.00		1.727	0.009		6451535	54.0		108	54389	
4 Perfluoroper			0.009		0451555	34.0		106	34369	
262.90 > 219.00		1.737	0.0	1.000	2720956	21.1		106	1754	
D 47 13C3-PFB	S									
301.90 > 83.00	1.754	1.755	-0.001		152698	NC			6155	
5 Perfluorobut										
298.90 > 80.00		1.755	0.008	1.000	3974481	16.2	2 42/0 00 0 00)	91.5	2886	
	1.763	1.755	0.008	1.000	1639741		2.42(0.00-0.00)		2892	
61 Sodium 1H, 327.00 > 307.00		п-реши 1.960		1.000	1050923	19.6		105	30677	
D 7 13C2 PFHx		, 00	0.0		.000720	.,				
315.00 > 270.00		1.994	0.0		6067106	55.0		110	32919	
6 Perfluorohex	kanoic ac	cid								
313.00 > 269.00	1.994	1.994	0.0	1.000	2245406	19.7		98.7	6612	
D 9 13C4-PFH _p										
367.00 > 322.00		2.316	0.005		5711767	58.7		117	26087	
10 Perfluorohe 363.00 > 319.00	•		0.005	1.000	2331686	20.2		101	5677	
8 Perfluorohe				1.000	2331000	20.2		101	3077	
399.00 > 80.00		2.324	0.013	1.000	3067433	17.3		95.3	2794	
D 11 18O2 PFH										
403.00 > 84.00	2.337	2.332	0.005		8177655	51.0		108	33100	
					Dogo 751 of 1	1404				

Data File:	e: \\ChromNa\Sacramento\ChromData\A8_N\20170722-45761.b\2017.07.21C_015.d									
Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
12 Codium 1U	111 211 2	U porflu	oroocton					-		
13 Sodium 1H, 427.00 > 407.00	2.640	•		1.000	953339	20.1		106	17248	
D 12 M2-6:2FTS 429.00 > 409.00		2.634	0.006		2628473	50.0		105	24644	
* 62 13C2-PFOA 415.00 > 370.00		2.656	0.005		4914749	50.0		100	33927	
D 14 13C4 PFO. 417.00 > 372.00		2.656	0.013		4844514	55.2		110	30186	
15 Perfluorooc			0.010		1011011	00.2		110	00100	
413.00 > 369.00 413.00 > 169.00	2.669	2.663 2.663	0.006	1.000 1.000	2113195 1191799	20.8	1.77(0.90-1.10)	104	422 6381	
				1.000	1191799		1.77(0.90-1.10)		0301	
16 Perfluorohe 449.00 > 80.00		2.670	0.006	1.000	2869356	20.9		110	20142	
17 Perfluorooc			b							
499.00 > 80.00 499.00 > 99.00		3.029 3.029	0.005 0.005	1.000 1.000	2287567 481865	18.9	4.75(0.90-1.10)	102	8885 4544	
20 Perfluorono	nanoic a	ncid					, ,			
463.00 > 419.00	3.034	3.029	0.005	1.000	1541940	19.9		99.4	3315	
D 18 13C4 PFO 503.00 > 80.00		3.029	0.005		5596821	47.4		99.2	24944	
D 19 13C5 PFN	A									
468.00 > 423.00		3.029	0.005	20	3878947	56.0		112	27417	
25 Sodium 1H, 527.00 > 507.00		•	0.005	1.000	702621	19.2		100	13133	
D 26 M2-8:2FTS 529.00 > 509.00		3.372	0.005		1904510	48.5		101	19233	
24 Perfluorode	canoic a	icid								
513.00 > 469.00 D 23 13C2 PFD		3.380	0.014	1.000	1224680	21.9		109	5399	
515.00 > 470.00	3.385	3.380	0.005		2994038	49.5		99.0	10686	
D 21 13C8 FOS. 506.00 > 78.00		3.388	0.006		9890080	50.4		101	17946	
22 Perfluorooci				1 000	277/202	20.7		102	17000	
498.00 > 78.00 28 N-methyl pe		3.388 ctane su	0.006 Ifonami	1.000	3776202	20.7		103	17223	
570.00 > 419.00	3.548	3.543	0.005	1.000	402503	20.1		101	2498	
D 27 d3-NMeFC 573.00 > 419.00		3.543	0.005		1101258	50.2		100	8207	
29 Perfluorode 599.00 > 80.00		Ifonic ac 3.690		1.000	1204402	18.7		97.1	10547	
D 32 d5-NEtFOS		3.090	0.014	1.000	1396402	10.7		97.1	10567	
589.00 > 419.00		3.699	0.005		1152240	50.1		100	3294	
31 Perfluoroun 563.00 > 519.00		3.709	0.005	1.000	953211	20.2		101	1583	
33 N-ethyl perf 584.00 > 419.00		ane sulfo 3.709	onamid 0.005	1.003	405958	20.7		104	4670	
D 30 13C2 PFU	nA			-						
565.00 > 520.00	3.714	3.709	0.005		Page 752 of 1	104 ^{55.3}		111	7923	

Report Date: 25-Jul-2017 10:40:51 Chrom Revision: 2.2 26-Jun-2017 08:09:44 \\ChromNa\Sacramento\ChromData\A8_N\20170722-45761_b\2017_07_21C_015_d

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170722-45761.b\2017.07.21C_015.d										
Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 34 d-N-MeFO	SA-M									
515.00 > 169.00		3.886	0.004		2507422	49.7		99.4	1713	
35 MeFOSA										
512.00 > 169.00	3.899	3.895	0.004	1.000	903477	20.1		101	6849	
D 36 13C2 PFD	οA									
615.00 > 570.00	4.008	4.004	0.004		2280582	52.4		105	5261	
37 Perfluorodo	decanoio	acid								
613.00 > 569.00	4.008	4.004	0.004	1.000	843580	19.6		97.9	1094	
D 38 d-N-EtFOS	A-M									
531.00 > 169.00	4.078	4.072	0.006		2483824	48.8		97.6	5604	
39 N-ethylperflu	uoro-1-o	ctanesul	fonami							
526.00 > 169.00	4.087	4.080	0.007	1.000	947005	20.6		103	5929	
41 Perfluorotrio	lecanoic	acid								
663.00 > 619.00	4.273	4.266	0.007	1.000	802665	20.7		103	300	
D 43 13C2-PFT	eDA									
715.00 > 670.00	4.506	4.498	0.008		4271962	52.5		105	14093	
42 Perfluoroteti	radecan	oic acid								
712.50 > 668.90		4.498	0.008	1.000	1689904	19.0		95.2	603	
713.00 > 169.00	4.497	4.498	-0.001	0.998	214478		7.88(0.00-0.00)		4402	
D 44 13C2-PFH										
815.00 > 770.00	4.907	4.900	0.007		2096891	49.4		98.7	3149	
45 Perfluorohe:										
813.00 > 769.00	4.907	4.910	-0.003	1.000	765811	19.0		95.0	103	
46 Perfluorooct										
913.00 > 869.00	5.248	5.243	0.005	1.000	761372	19.0		95.0	346	
00.51										

OC Flag Legend Processing Flags

NC - Not Calibrated

Reagents:

LCPFC_FULL-L4_00008 Amount Added: 1.00 Units: mL

Report Date: 25-Jul-2017 10:40:52 Chrom Revision: 2.2 26-Jun-2017 08:09:44 TestAmerica Sacramento Data File: **Injection Date:** 21-Jul-2017 20:38:31 Instrument ID: A8_N Lims ID: CCV L4 Client ID: Operator ID: SACINSTLCMS01 ALS Bottle#: 31 Worklist Smp#: Injection Vol: 2.0 ul Dil. Factor: 1.0000 Method: Limit Group: LC PFC_DOD ICAL $A8_N$ 2 Perfluorobutyric acid D 113C4 PFBA D 313C5-PFPeA Exp1:m/z 217.00 > 172.00:Moving5PtAverage_x Exp1:m/z 212.90 > 169.00:Moving5PtAverage_x Exp1:m/z 267.90 > 223.00:Moving5PtAverage_x (000001 (000001 (000001 (000001) 030 0025 <u>≻</u>28 15 21 10 1.2 1.5 1.7 2.0 0.9 1.8 2.1 1.2 1.5 1.8 2.1 5 Perfluorobutanesulfonic acid 5 Perfluorobutanesulfonic acid 4 Perfluoropentanoic acid Exp1:m/z 262.90 > 219.00:Moving5PtAverage_x Exp1:m/z 298.90 > 80.00:Moving5PtAverage_x3 Exp1:m/z 298.90 > 99.00:Moving5PtAverage_x3 84 (000015 X) 12 X (0014 (00012 (X)10 ©72-×60--48 36 24 12 2.0 2.3 2.3 1.4 1.4 1.7 2.0 1.5 1.8 1.1 1.2 2.1 2.4 61 Sodium 1H,1H,2H,2H-perfluorohexaDe 7 13C2 PFHxA 6 Perfluorohexanoic acid Exp1:m/z 313.00 > 269.00:Moving5PtAverage_x 28 Y (X100000) 49 ©24**-**0042 ×35 21 1.5 1.8 2.1 2.7 1.5 1.8 2.1 2.7 2.8 2.4 1.2 2.4 1.0 1.6 2.2 8 Perfluorohexanesulfonic acid 9 13C4-PFHpA 10 Perfluoroheptanoic acid Exp1:m/z 367.00 > 322.00:Moving5PtAverage_x Exp1:m/z 363.00 > 319.00:Moving5PtAverage_x Exp1:m/z 399.00 > 80.00:Moving5PtAverage_x3 (X100000) (00001 00020 ∑₁₆ 0 0| 01.9 2.2 2.5 2.8 1.7 2.9 1.8 2.1 2.4 2.7 3.0 1.5 1.6

Report Date: 25-Jul-2017 10:40:52 Chrom Revision: 2.2 26-Jun-2017 08:09:44 Data File: \ChromNa\Sacramento\ChromData\A8_N\20170722-45761.b\2017.07.21C_015.d D 11 1802 PFHxS 13 Sodium 1H,1H,2H,2H-perfluoroocta De 12 M2-6:2FTS Exp1:m/z 427.00 > 407.00:Moving5PtAverage_x Exp1:m/z 403.00 > 84.00:Moving5PtAverage_x3 Exp1:m/z 429.00 > 409.00:Moving5PtAverage_x (00030 1×25 (X100000) ©36-30-<u></u>24⁼ ≻20 18 15 12 10 2.2 2.5 2.6 2.9 2.7 1.9 2.8 2.0 2.3 3.2 2.1 2.4 3.0 1.6 62 13C2-PFOA D 14 13C4 PFOA 15 Perfluorooctanoic acid Exp1:m/z 417.00 > 372.00:Moving5PtAverage_x Exp1:m/z 415.00 > 370.00:Moving5PtAverage_> Exp1:m/z 413.00 > 369.00:Moving5PtAverage_> (000001X) X 84 (000015 X) 12 ©72-560-2.669 >48 36 24 12 0 2.6 2.6 2.9 3.2 2.3 2.3 2.9 3.2 2.7 2.4 3.0 15 Perfluorooctanoic acid 16 Perfluoroheptanesulfonic Acid 17 Perfluorooctane sulfonic acid Exp1:m/z 413.00 > 169.00:Moving5PtAverage_x 49**-**1 Exp1:m/z 449.00 > 80.00:Moving5PtAverage_x3 Exp1:m/z 499.00 > 80.00:Moving5PtAverage_x3 (X100000) (X100000) 8 63 00 54 00042 × × × 28 ×45 ≻₃₆-21 27 18 0 0 2.3 2.6 2.9 3.2 2.4 2.7 3.0 3.3 2.2 2.8 4.0 2.0 2.1 3.4 1.6 D 18 13C4 PFOS 17 Perfluorooctane sulfonic acid 20 Perfluorononanoic acid Exp1:m/z 499.00 > 99.00:Moving5PtAverage_x3 Exp1:m/z 503.00 > 80.00:Moving5PtAverage_x3 Exp1:m/z 463.00 > 419.00:Moving5PtAverage_x 63 (24⁻ 00020 × 16⁻ (00015 X)12 X)12 00054 X45 ∑36-

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27- 18-

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0

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12

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2.7

3.0

3.3

3.6

Report Date: 25-Jul-2017 10:40:52 Chrom Revision: 2.2 26-Jun-2017 08:09:44 Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170722-45761.b\2017.07.21C_015.d 19 13C5 PFNA 25 Sodium 1H,1H,2H,2H-perfluorodecabe26 M2-8:2FTS Exp1:m/z 529.00 > 509.00:Moving5PtAverage_x Exp1:m/z 468.00 > 423.00:Moving5PtAverage_x Exp1:m/z 527.00 > 507.00:Moving5PtAverage_x (0000015⁻ X) > g >₄₀ ≻₁₆-30 20 10 3.1 3.3 3.9 2.2 2.5 2.8 3.4 3.7 2.8 3.1 3.4 3.7 4.0 2.7 3.0 3.6 24 Perfluorodecanoic acid D 23 13C2 PFDA D 21 13C8 FOSA Exp1:m/z 513.00 > 469.00:Moving5PtAverage_x Exp1:m/z 515.00 > 470.00:Moving5PtAverage_> Exp1:m/z 506.00 > 78.00:Moving5PtAverage_x3 42 (12 (X) X (X () 30-30-30-(0001 X) 28 21 18 12 2.9 3.5 3.0 3.3 3.9 3.2 3.5 3.8 3.6 3.8 4.1 28 N-methyl perfluorooctane sulfonamiD 27 d3-NMeFOSAA 22 Perfluorooctane Sulfonamide Exp1:m/z 498.00 > 78.00:Moving5PtAverage_x3 (0000012 X) (15⁻000012⁻X) 0036- \times 30 18 12 0 2.9 3.2 3.5 3.8 2.9 3.2 3.5 3.8 3.4 3.7 4.0 2.6 4.1 4.1 2.8 3.1 4.3 29 Perfluorodecane Sulfonic acid D 32 d5-NEtFOSAA 31 Perfluoroundecanoic acid Exp1:m/z 563.00 > 519.00:Moving5PtAverage_x Exp1:m/z 599.00 > 80.00:Moving5PtAverage_x3 Exp1:m/z 589.00 > 419.00:Moving5PtAverage_x 63 (036⁻ 00001×)24⁻ 0042 005 35 00054 X V ∑36- ∑28- 18 27 21 14 18

3.6

3.9

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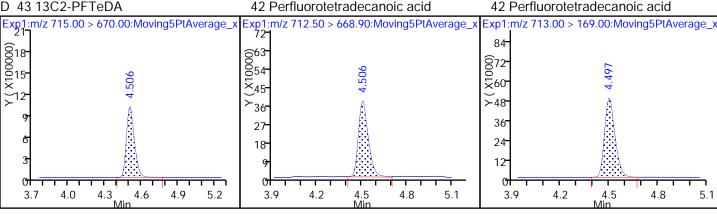
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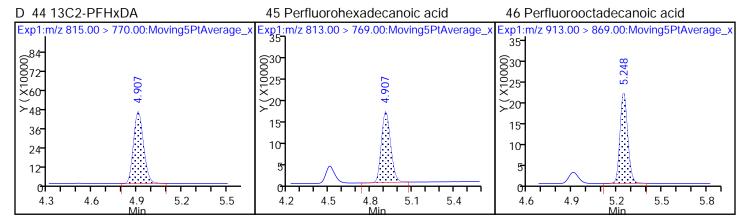
4.3

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Report Date: 25-Jul-2017 10:40:52 Chrom Revision: 2.2 26-Jun-2017 08:09:44

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170722-45761.b\2017.07.21C_015.d



Lab Name: TestAmerica Sacramento Job No.: 320-29732-1

SDG No.:

Lab Sample ID: CCV 320-175462/9 Calibration Date: 07/21/2017 21:33

Instrument ID: A8_N Calib Start Date: 07/20/2017 17:15

GC Column: GeminiC18 3×100 ID: 3.00 (mm) Calib End Date: 07/20/2017 18:04

Lab File ID: 2017.07.21C_023.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanoic acid (PFBA)	AveID	0.9107	0.9237		50.7	50.0	1.4	25.0
Perfluoropentanoic acid (PFPeA)	AveID	0.997	0.9816		49.2	50.0	-1.6	25.0
Perfluorobutanesulfonic acid (PFBS)	AveID	1.422	1.255		39.0	44.2	-11.7	25.0
Perfluorohexanoic acid (PFHxA)	AveID	0.9374	0.9560		51.0	50.0	2.0	25.0
Perfluoroheptanoic acid (PFHpA)	AveID	1.009	0.9936		49.2	50.0	-1.5	25.0
Perfluorohexanesulfonic acid (PFHxS)	AveID	1.023	0.9776		43.5	45.5	-4.5	25.0
6:2FTS	AveID	0.8582	0.8350		46.1	47.4	-2.7	25.0
Perfluorooctanoic acid (PFOA)	AveID	1.046	1.028		49.1	50.0	-1.8	25.0
Perfluoroheptanesulfonic Acid (PFHpS)	AveID	1.174	1.158		47.0	47.6	-1.3	25.0
Perfluorononanoic acid (PFNA)	AveID	1.000	0.996		49.8	50.0	-0.4	25.0
Perfluorooctanesulfonic acid (PFOS)	AveID	1.034	1.013		45.5	46.4	-2.0	25.0
8:2FTS	AveID	0.9182	0.8612		44.9	47.9	-6.2	25.0
Perfluorodecanoic acid (PFDA)	AveID	0.9359	0.9261		49.5	50.0	-1.0	25.0
Perfluorooctane Sulfonamide (FOSA)	AveID	0.9235	0.9079		49.2	50.0	-1.7	25.0
N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA)	AveID	0.9079	0.9213		50.7	50.0	1.5	25.0
Perfluorodecanesulfonic acid (PFDS)	AveID	0.6369	0.6071		46.0	48.2	-4.7	25.0
N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)	AveID	0.8499	0.8386		49.3	50.0	-1.3	25.0
Perfluoroundecanoic acid (PFUnA)	L2ID		0.998		49.4	50.0	-1.1	25.0
MeFOSA	AveID	0.8961	0.8790		49.0	50.0	-1.9	25.0
Perfluorododecanoic acid (PFDoA)	AveID	0.9442	0.9609		50.9	50.0	1.8	25.0
N-EtFOSA-M	AveID	0.9273	0.9414		50.8	50.0	1.5	25.0
Perfluorotridecanoic Acid (PFTriA)	AveID	0.8512	0.9210		54.1	50.0	8.2	25.0
Perfluorotetradecanoic acid (PFTeA)	AveID	1.947	1.833		47.1	50.0	-5.9	25.0
Perfluoro-n-hexadecanoic acid (PFHxDA)	L2ID		0.8151		47.2	50.0	-5.7	25.0
Perfluoro-n-octadecanoic acid (PFODA)	AveID	0.8788	0.8071		45.9	50.0	-8.2	25.0
13C4 PFBA	Ave	179976	179034		49.7	50.0	-0.5	50.0
13C5 PFPeA	Ave	119573	122233		51.1	50.0	2.2	50.0
13C2 PFHxA	Ave	110403	118354		53.6	50.0	7.2	50.0
13C4-PFHpA	Ave	97315	108911		56.0	50.0	11.9	50.0
1802 PFHxS	Ave	160345	174480		51.5	47.3	8.8	50.0
M2-6:2FTS	Ave	52582	53483		48.3	47.5	1.7	50.0

Lab Name: TestAmerica Sacramento Job No.: 320-29732-1

SDG No.:

Lab Sample ID: <u>CCV 320-175462/9</u> Calibration Date: <u>07/21/2017 21:33</u>

Instrument ID: <u>A8_N</u> Calib Start Date: 07/20/2017 17:15

GC Column: GeminiC18 3×100 ID: 3.00 (mm) Calib End Date: 07/20/2017 18:04

Lab File ID: 2017.07.21C_023.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE CF	CF	MIN CF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
13C4 PFOA	Ave	87797	93139		53.0	50.0	6.1	50.0
13C4 PFOS	Ave	118039	114874		46.5	47.8	-2.7	50.0
13C5 PFNA	Ave	69282	72949		52.6	50.0	5.3	50.0
M2-8:2FTS	Ave	39250	39415		48.1	47.9	0.4	50.0
13C2 PFDA	Ave	60512	64619		53.4	50.0	6.8	50.0
13C8 FOSA	Ave	196294	196685		50.1	50.0	0.2	50.0
d3-NMeFOSAA	Ave	21953	21431		48.8	50.0	-2.4	50.0
d5-NEtFOSAA	Ave	22991	22867		49.7	50.0	-0.5	50.0
13C2 PFUnA	Ave	41991	45484		54.2	50.0	8.3	50.0
d-N-MeFOSA-M	Ave	50429	51438		51.0	50.0	2.0	50.0
13C2 PFDoA	Ave	43561	42322		48.6	50.0	-2.8	50.0
d-N-EtFOSA-M	Ave	50912	48963		48.1	50.0	-3.8	50.0
13C2-PFTeDA	Ave	81327	81132		49.9	50.0	-0.2	50.0
13C2-PFHxDA	Ave	42486	40673		47.9	50.0	-4.3	50.0

Report Date: 24-Jul-2017 16:31:51 Chrom Revision: 2.2 26-Jun-2017 08:09:44

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170722-45761.b\2017.07.21C_023.d

Lims ID: CCV L5

Client ID:

Sample Type: CCV

Inject. Date: 21-Jul-2017 21:33:44 ALS Bottle#: 32 Worklist Smp#: 9

Injection Vol: 2.0 ul Dil. Factor: 1.0000

Sample Info: CCV L5

Misc. Info.: Plate: 1 Rack: 1

Operator ID: SACINSTLCMS01 Instrument ID: A8_N

Sublist: chrom-A8_N*sub18

Method: \ChromNa\Sacramento\ChromData\A8_N\20170722-45761.b\A8_N.m

Limit Group: LC PFC_DOD ICAL

Last Update: 24-Jul-2017 16:31:50 Calib Date: 20-Jul-2017 18:04:17

Integrator: Picker

Quant Method: Isotopic Dilution Quant By: Initial Calibration

Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20170720-45703.b\2017.07.20ICAL_010.d

Column 1: Det: EXP1

Process Host: XAWRK004

First Level Reviewer: chandrasenas Date: 24-Jul-2017 16:10:06

First Level Revie	ewer. Chanurasenas				Date. 24-Jul-2017 10.10)		
Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 113C4 PFBA	\									
217.00 > 172.00		1.537	0.0		8951695	49.7		99.5	25076	
2 Perfluorobut	yric acid									
212.90 > 169.00	1.537	1.537	0.0	1.000	8268235	50.7		101	4767	
D 3 13C5-PFP6	eΑ									
267.90 > 223.00	1.727	1.727	0.0		6111670	51.1		102	39836	
4 Perfluoroper										
262.90 > 219.00		1.737	0.0	1.000	5999311	49.2		98.4	3697	
D 47 13C3-PFB										
301.90 > 83.00		1.755	0.0		147995	NC			6008	
5 Perfluorobut			0.0	1 000	0/70704	20.0		00.0	(470	
298.90 > 80.00 298.90 > 99.00	1.755 1.755	1.755 1.755	0.0	1.000 1.000	9679724 3974722	39.0	2.44(0.00-0.00)	88.3	6470 6694	
61 Sodium 1H,					3714122		2.44(0.00-0.00)		0074	
327.00 > 307.00		1.960		1.000	2637413	50.8		109	66738	
D 7 13C2 PFHx										
315.00 > 270.00		1.994	0.0		5917707	53.6		107	33801	
6 Perfluorohex	canoic ac	cid								
313.00 > 269.00	1.994	1.994	0.0	1.000	5657594	51.0		102	12686	
D 9 13C4-PFHp	Α									
367.00 > 322.00	2.316	2.316	0.0		5445527	56.0		112	24021	
10 Perfluorohe	ptanoic a	acid								
363.00 > 319.00	2.316	2.316	0.0	1.000	5410839	49.2		98.5	9845	
8 Perfluorohex										
399.00 > 80.00	2.324	2.324	0.0	1.000	7760763	43.5		95.5	5661	
D 11 1802 PFH										
403.00 > 84.00	2.332	2.332	0.0		8252910	51.5		109	33734	
					Dogg 761 of 1	1101				

 Report Date: 24-Jul-2017 16:31:51
 Chrom Revision: 2.2 26-Jun-2017 08:09:44

 Data File:
 \\ChromNa\Sacramento\ChromData\A8_N\20170722-45761.b\2017.07.21C_023.d

 Signal
 RT
 RT
 RT
 RT
 REL Response
 Amount ng/ml
 Ratio(Limits)
 %Response

Data File.	WOTH	militarse	acrament	OCHION	Data AO_N\201	10122-4310	1.0/2017.07.210_0	25.u		
Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
13 Sodium 1H, 427.00 > 407.00		•		e 1.000	2116755	46.1		97.3	28878	
D 12 M2-6:2FTS 429.00 > 409.00		2.634	0.0		2540444	48.3		102	29032	
* 62 13C2-PFOA 415.00 > 370.00		2.656	0.0		4460103	50.0		100	25141	
D 14 13C4 PFO 417.00 > 372.00		2.656	0.0		4656963	53.0		106	24398	
15 Perfluorooct 413.00 > 369.00 413.00 > 169.00	2.663	2.663 2.663	0.0 0.0	1.000 1.000	4785231 2813219	49.1	1.70(0.90-1.10)	98.2	907 8747	
16 Perfluorohej 449.00 > 80.00				1.000	6333497	47.0		98.7	31287	
17 Perfluorooct 499.00 > 80.00 499.00 > 99.00	3.029	onic acio 3.029 3.029	0.0	1.000 1.000	5400907 1145378	45.5	4.72(0.90-1.10)	98.0	11534 7502	
20 Perfluoronoi 463.00 > 419.00			0.0	1.000	3632526	49.8		99.6	7537	
D 18 13C4 PFOS 503.00 > 80.00	3.029	3.029	0.0		5490956	46.5		97.3	30201	
D 19 13C5 PFN/ 468.00 > 423.00	3.029				3647427	52.6		105	17693	
25 Sodium 1H, 527.00 > 507.00	3.372	•		ne 1.000	1625841	44.9		93.8	17815	
D 26 M2-8:2FTS 529.00 > 509.00	3.372	3.372	0.0		1887970	48.1		100	24057	
24 Perfluorodeo 513.00 > 469.00	3.380		0.0	1.000	2992188	49.5		99.0	9014	
D 23 13C2 PFD/ 515.00 > 470.00	3.380	3.380	0.0		3230951	53.4		107	13012	
D 21 13C8 FOSA 506.00 > 78.00 22 Perfluorooct	3.388				9834227	50.1		100	26505	
498.00 > 78.00	3.388	3.388	0.0	1.000	8928867	49.2		98.3	21397	
28 N-methyl pe 570.00 > 419.00 D 27 d3-NMeFO	3.543	3.543		1.000	987152	50.7		101	5477	
573.00 > 419.00 29 Perfluorodeo	3.543	3.543			1071532	48.8		97.6	7637	
599.00 > 80.00 D 32 d5-NEtFOS	3.690	3.690		1.000	3361649	46.0		95.3	11195	
589.00 > 419.00 31 Perfluoround	3.699	3.699	0.0		1143360	49.7		99.5	3045	
563.00 > 519.00 33 N-ethyl perfl	3.709	3.709		1.000	2269611	49.4		98.9	3410	
584.00 > 419.00 D 30 13C2 PFUr	3.709			1.003	958794	49.3		98.7	7192	
565.00 > 520.00		3.709	0.0		Page 762 of 1	104 ^{54.2}		108	8515	

Data File:	\\Chrc	mNa\Sa	acrament	o\Chrom	Data\A8_N\201	70722-4576	1.b\2017.07.21C_0	23.d		
Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 34 d-N-MeFOS	SA-M									
515.00 > 169.00		3.886	0.0		2571891	51.0		102	3153	
35 MeFOSA										
512.00 > 169.00	3.895	3.895	0.0	1.000	2260616	49.0		98.1	7231	
D 36 13C2 PFD	ρA									
615.00 > 570.00	4.004	4.004	0.0		2116116	48.6		97.2	4335	
37 Perfluorodo	decanoio	acid								
613.00 > 569.00	4.004	4.004	0.0	1.000	2033469	50.9		102	2342	
D 38 d-N-EtFOS	A-M									
531.00 > 169.00	4.072	4.072	0.0		2448136	48.1		96.2	6184	
39 N-ethylperflu	uoro-1-o	ctanesu	lfonami							
526.00 > 169.00	4.080	4.080	0.0	1.000	2304776	50.8		102	4330	
41 Perfluorotrid	lecanoic	acid								
663.00 > 619.00	4.266	4.266	0.0	1.000	1948832	54.1		108	816	
D 43 13C2-PFT6	eDA									
715.00 > 670.00	4.498	4.498	0.0		4056579	49.9		99.8	12147	
42 Perfluorotetr										
712.50 > 668.90		4.498	0.0	1.000	3878403	47.1		94.1	1488	
713.00 > 169.00		4.498	0.0	1.000	533561		7.27(0.00-0.00)		8111	
D 44 13C2-PFH					0000400	47.0		05.7	0001	
815.00 > 770.00		4.900	0.0		2033638	47.9		95.7	3231	
45 Perfluorohex				4 000	170 1000	47.0		0.4.0	007	
813.00 > 769.00		4.910	0.0	1.000	1724822	47.2		94.3	227	
46 Perfluorooct			0.0	1 000	1707000	45.0		04.0		
913.00 > 869.00	5.243	5.243	0.0	1.000	1707802	45.9		91.8	665	
QC Flag Led	gend									

OC Flag Legend Processing Flags

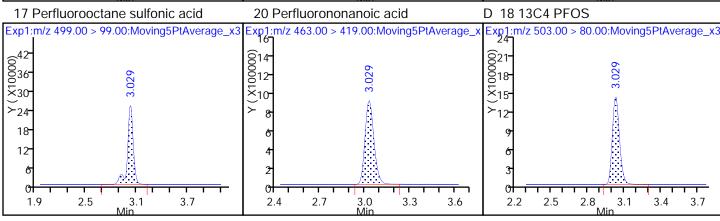
NC - Not Calibrated

Reagents:

LCPFC_FULL-L5_00008 Amount Added: 1.00 Units: mL

Report Date: 24-Jul-2017 16:31:51 Chrom Revision: 2.2 26-Jun-2017 08:09:44 TestAmerica Sacramento Data File: **Injection Date:** 21-Jul-2017 21:33:44 Instrument ID: A8_N Lims ID: CCV L5 Client ID: Operator ID: SACINSTLCMS01 ALS Bottle#: 32 Worklist Smp#: 9 Injection Vol: 2.0 ul Dil. Factor: 1.0000 Method: Limit Group: LC PFC_DOD ICAL $A8_N$ D 113C4 PFBA 2 Perfluorobutyric acid D 313C5-PFPeA Exp1:m/z 217.00 > 172.00:Moving5PtAverage_x Exp1:m/z 212.90 > 169.00:Moving5PtAverage_x Exp1:m/z 267.90 > 223.00:Moving5PtAverage_x (000001X) 30 30 042 0036 630 60 60 625 ×30 ≻₂₄-18 18 10 12 12 1.2 1.5 1.9 1.1 1.7 2.0 0.9 1.8 2.1 1.0 1.3 1.6 2.2 2.5 5 Perfluorobutanesulfonic acid 5 Perfluorobutanesulfonic acid 4 Perfluoropentanoic acid Exp1:m/z 298.90 > 80.00:Moving5PtAverage_x3 491 Exp1:m/z 262.90 > 219.00:Moving5PtAverage_x Exp1:m/z 298.90 > 99.00:Moving5PtAverage x3 628 0024 ×20 0042 0005 0035 **_**28 21 12 1.9 1.3 1.9 2.2 2.5 1.0 2.2 2.5 1.4 2.0 2.3 1.3 1.6 1.1 61 Sodium 1H,1H,2H,2H-perfluorohexable 7 13C2 PFHxA 6 Perfluorohexanoic acid Exp1:m/z 315.00 > 270.00:Moving5PtAverage_) Exp1:m/z 313.00 > 269.00:Moving5PtAverage_x Exp1:m/z 327.00 > 307.00:Moving5PtAverage_x (0000012 (X) X) X (00001 X) 16 0024 00020 × 16 16 12 1.5 2.1 2.7 1.5 1.8 2.1 2.7 2.8 0.9 2.4 1.0 1.6 2.2 1.2 8 Perfluorohexanesulfonic acid 9 13C4-PFHpA 10 Perfluoroheptanoic acid Exp1:m/z 367.00 > 322.00:Moving5PtAverage_x Exp1:m/z 363.00 > 319.00:Moving5PtAverage_x Exp1:m/z 399.00 > 80.00:Moving5PtAverage_x3 28 (000018⁻ ©21- 00024 00024 ×20 ∑₁₅ ∑16⁻ 12 0 0 1.8 2.1 2.4 2.7 3.0 1.9 Page 764rof 1104 1.5 1.8 2.1 2.4 2.7 3.0 1.5 1.6

Report Date: 24-Jul-2017 16:31:51 Chrom Revision: 2.2 26-Jun-2017 08:09:44 Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170722-45761.b\2017.07.21C_023.d D 11 1802 PFHxS 13 Sodium 1H,1H,2H,2H-perfluoroocta De 12 M2-6:2FTS Exp1:m/z 403.00 > 84.00:Moving5PtAverage_x3 35 (X100000) (X100000) 8 91- (000001 ×) 20 ×65 ≻52 15 39 10 26 13 2.5 2.6 2.9 1.9 2.2 2.5 2.8 1.9 2.2 2.8 3.1 3.4 2.0 2.3 3.2 1.6 62 13C2-PFOA D 14 13C4 PFOA 15 Perfluorooctanoic acid Exp1:m/z 413.00 > 369.00:Moving5PtAverage_x Exp1:m/z 415.00 > 370.00:Moving5PtAverage_> Exp1:m/z 417.00 > 372.00:Moving5PtAverage_x 618 600 15 (0000015 X) 618 600 15 ∑₁₂ ∑₁₂-0 2.6 3.2 2.3 2.9 2.3 2.6 2.9 2.2 2.5 2.8 3.2 3.1 15 Perfluorooctanoic acid 16 Perfluoroheptanesulfonic Acid 17 Perfluorooctane sulfonic acid Exp1:m/z 413.00 > 169.00:Moving5PtAverage_x Exp1:m/z 449.00 > 80.00:Moving5PtAverage_x3 Exp1:m/z 499.00 > 80.00:Moving5PtAverage_x3 (000015⁻ ×12⁻ 000024 20000 20 (X100000) ×16 12 0 0 3.2 2.4 2.7 3.0 2.3 2.6 2.9 2.2 2.8 3.4 4.0 2.1 2.0 1.6 D 18 13C4 PFOS 17 Perfluorooctane sulfonic acid 20 Perfluorononanoic acid Exp1:m/z 463.00 > 419.00:Moving5PtAverage_x Exp1:m/z 503.00 > 80.00:Moving5PtAverage_x3 Exp1:m/z 499.00 > 99.00:Moving5PtAverage_x3



Report Date: 24-Jul-2017 16:31:51 Chrom Revision: 2.2 26-Jun-2017 08:09:44 Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170722-45761.b\2017.07.21C_023.d D 19 13C5 PFNA 25 Sodium 1H,1H,2H,2H-perfluorodecabe26 M2-8:2FTS Exp1:m/z 468.00 > 423.00:Moving5PtAverage_x (0000012 (0000012 (0000012) (0000012) (0000012) 63 0054 ×45 ≻₃₆-33 27 22 18 2.7 3.0 3.3 3.9 2.9 2.4 3.3 3.6 2.7 3.0 3.6 3.2 3.5 3.8 4.1 2.6 24 Perfluorodecanoic acid D 23 13C2 PFDA D 21 13C8 FOSA Exp1:m/z 506.00 > 78.00:Moving5PtAverage_x3 Exp1:m/z 515.00 > 470.00:Moving5PtAverage_> Exp1:m/z 513.00 > 469.00:Moving5PtAverage_> (12 X (X100000) X (X100000) X (X100000) (012 (0100000) (0100000) (010000) (010000) (010000) (010000) (010000) (010000) (010000) (010000) (010000) (010000) (010000) (010000) (010000) (010000) (010000) (01000 035<u>-</u> $\stackrel{\smile}{\scriptstyle_{25}}$ 15 10 0 3.3 3.9 3.3 3.9 3.0 3.0 3.4 3.6 3.6 3.7 4.0 22 Perfluorooctane Sulfonamide 28 N-methyl perfluorooctane sulfonamiD 27 d3-NMeFOSAA Exp1:m/z 570.00 > 419.00:Moving5PtAverage_x | Exp1:m/z 573.00 > 419.00:Moving5PtAverage_x | Exp1:m/z 498.00 > 78.00:Moving5PtAverage_x3 (00001X) (00001X) 42 6³⁵ X30-×25 _20 ≻₂₀-18 15 15 10 12 10 0 2.8 3.1 3.4 4.0 3.4 3.7 4.0 2.8 3.1 3.7 4.0 3.7 4.3 2.8 3.1 4.3 3.4 4.3 29 Perfluorodecane Sulfonic acid D 32 d5-NEtFOSAA 31 Perfluoroundecanoic acid Exp1:m/z 599.00 > 80.00:Moving5PtAverage_x3 Exp1:m/z 589.00 > 419.00:Moving5PtAverage_x Exp1:m/z 563.00 > 519.00:Moving5PtAverage_x (0000012 (X10000012) (X10000012) 6⁴² 65 65 65 ×30-≻₂₄-

3.6

3.9

4.2

18-

3.0

3.3

0

3.0

3.3

3.6

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4.2

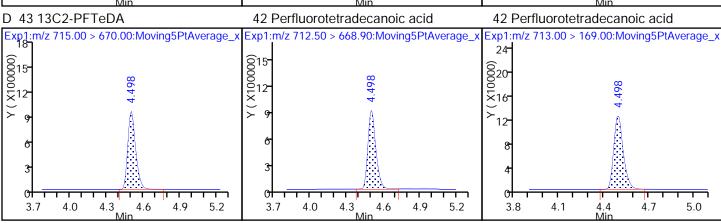
39

26-

3.0

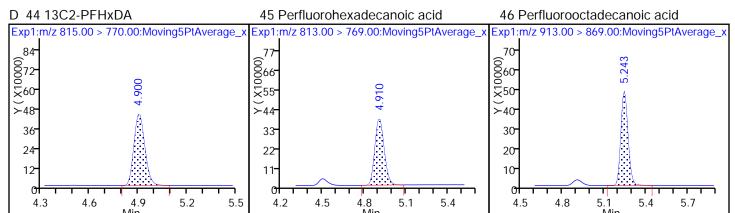
3.3

3.9



Report Date: 24-Jul-2017 16:31:51 Chrom Revision: 2.2 26-Jun-2017 08:09:44

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170722-45761.b\2017.07.21C_023.d



Lab Name: TestAmerica Sacramento Job No.: 320-29732-1

SDG No.:

Lab Sample ID: <u>ICV 320-175476/12</u> Calibration Date: <u>07/23/2017 14:12</u>

Instrument ID: A8_N Calib Start Date: 07/23/2017 13:10

GC Column: GeminiC18 3x100 ID: 3.00 (mm) Calib End Date: 07/23/2017 13:58

Lab File ID: 2017.07.23ICAL_012.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanoic acid (PFBA)	AveID	0.8820	0.9506		53.4	49.5	7.8	25.0
Perfluoropentanoic acid (PFPeA)	AveID	1.042	1.048		49.8	49.5	0.6	25.0
Perfluorobutanesulfonic acid (PFBS)	AveID	1.489	1.590		46.8	43.8	6.8	25.0
Perfluorohexanoic acid (PFHxA)	AveID	0.9521	1.064		55.3	49.5	11.7	25.0
Perfluoroheptanoic acid (PFHpA)	AveID	1.026	1.096		52.9	49.5	6.8	25.0
Perfluorohexanesulfonic acid (PFHxS)	AveID	1.082	1.064		46.0	46.8	-1.7	25.0
6:2FTS	AveID	0.8958	0.8826		46.2	46.9	-1.5	25.0
Perfluorooctanoic acid (PFOA)	AveID	1.067	1.145		53.1	49.5	7.3	25.0
Perfluoroheptanesulfonic Acid (PFHpS)	AveID	1.122	1.189		50.0	47.1	6.0	25.0
Perfluorononanoic acid (PFNA)	AveID	1.018	1.057		51.4	49.5	3.8	25.0
Perfluorooctanesulfonic acid (PFOS)	AveID	1.057	0.9909		44.3	47.3	-6.3	25.0
Perfluorooctane Sulfonamide (FOSA)	AveID	0.9018	1.006		55.2	49.5	11.5	25.0
8:2FTS	AveID	0.9107	0.9482		49.4	47.4	4.1	25.0
Perfluorodecanoic acid (PFDA)	AveID	0.9799	1.021		51.6	49.5	4.2	25.0
N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA)	AveID	0.9100	1.004		54.6	49.5	10.3	25.0
Perfluorodecanesulfonic acid (PFDS)	AveID	0.6225	0.7165		55.0	47.8	15.1	25.0
N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)	AveID	0.8488	0.9413		54.9	49.5	10.9	25.0
Perfluoroundecanoic acid (PFUnA)	L2ID		1.065		51.3	49.5	3.6	25.0
MeFOSA	AveID	0.9183	0.9367		50.5	49.5	2.0	25.0
Perfluorododecanoic acid (PFDoA)	AveID	0.9292	1.075		57.3	49.5	15.7	25.0
N-EtFOSA-M	AveID	0.9274	1.041		55.6	49.5	12.2	25.0
Perfluorotridecanoic Acid (PFTriA)	AveID	0.8514	0.9886		57.5	49.5	16.1	25.0
Perfluorotetradecanoic acid (PFTeA)	AveID	1.922	2.177		56.1	49.5	13.3	25.0
Perfluoro-n-hexadecanoic acid (PFHxDA)	L2ID		0.8767		54.2	49.5	9.4	25.0
Perfluoro-n-octadecanoic acid (PFODA)	AveID	0.7652	0.8436		54.6	49.5	10.2	25.0
13C4 PFBA	Ave	156025	157873		50.1	49.5	1.2	50.0
13C5 PFPeA	Ave	110496	108697		48.7	49.5	-1.6	50.0
13C2 PFHxA	Ave	101156	98061		48.0	49.5	-3.1	50.0
13C4-PFHpA	Ave	83824	83605		49.4	49.5	-0.3	50.0
1802 PFHxS	Ave	137438	142796		48.7	46.8	3.9	50.0
M2-6:2FTS	Ave	47560	48376		47.8	47.0	1.7	50.0

Lab Name: TestAmerica Sacramento Job No.: 320-29732-1

SDG No.:

Lab Sample ID: <u>ICV 320-175476/12</u> Calibration Date: <u>07/23/2017 14:12</u>

Instrument ID: A8_N Calib Start Date: 07/23/2017 13:10

GC Column: GeminiC18 3×100 ID: 3.00 (mm) Calib End Date: 07/23/2017 13:58

Lab File ID: 2017.07.23ICAL_012.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE CF	CF	MIN CF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
13C4 PFOA	Ave	82143	77215		46.5	49.5	-6.0	50.0
13C4 PFOS	Ave	108200	104794		45.8	47.3	-3.1	50.0
13C5 PFNA	Ave	65740	60434		45.5	49.5	-8.1	50.0
13C8 FOSA	Ave	182802	161974		43.9	49.5	-11.4	50.0
M2-8:2FTS	Ave	36500	35620		46.3	47.4	-2.4	50.0
13C2 PFDA	Ave	55836	55227		49.0	49.5	-1.1	50.0
d3-NMeFOSAA	Ave	21732	20364		46.4	49.5	-6.3	50.0
13C2 PFUnA	Ave	40729	38417		46.7	49.5	-5.7	50.0
d5-NEtFOSAA	Ave	21931	21506		48.5	49.5	-1.9	50.0
d-N-MeFOSA-M	Ave	47115	46615		49.0	49.5	-1.1	50.0
13C2 PFDoA	Ave	44655	37731		41.8	49.5	-15.5	50.0
d-N-EtFOSA-M	Ave	48834	45694		46.3	49.5	-6.4	50.0
13C2-PFTeDA	Ave	81216	74362		45.3	49.5	-8.4	50.0
13C2-PFH×DA	Ave	41307	34907		41.8	49.5	-15.5	50.0

Report Date: 24-Jul-2017 11:24:58 Chrom Revision: 2.2 26-Jun-2017 08:09:44

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170723-45765.b\2017.07.23ICAL_012.d

Lims ID: ICV Full

Client ID:

Sample Type: ICV

Inject. Date: 23-Jul-2017 14:12:14 ALS Bottle#: 36 Worklist Smp#: 12

Injection Vol: 2.0 ul Dil. Factor: 1.0000

Sample Info: ICV

Misc. Info.: Plate: 1 Rack: 1

Operator ID: SACINSTLCMS01 Instrument ID: A8_N

Sublist:

Method: \ChromNa\Sacramento\ChromData\A8_N\20170723-45765.b\A8_N.m

Limit Group: LC PFC_DOD ICAL

Last Update: 24-Jul-2017 11:24:57 Calib Date: 23-Jul-2017 13:58:26

Integrator: Picker

Quant Method: Isotopic Dilution Quant By: Initial Calibration

Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20170723-45765.b\2017.07.23ICAL_010.d

Column 1: Det: EXP1

Process Host: XAWRK004

First Level Reviewer: phomsophat Date: 23-Jul-2017 16:36:24

FIRST Level Revie	wer: pno	ınsopna	IL	Date:			23-Jul-2017 16:36:24	 		
Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 113C4 PFBA										
217.00 > 172.00		1.558	-0.005		7815518	50.1		101	39647	
2 Perfluorobut 212.90 > 169.00	,	1.564	-0.011	1.000	7429339	53.4			4108	
D 3 13C5-PFP6		1.001	0.011	1.000	7 127007	00.1			1100	
267.90 > 223.00		1.780	-0.008		5381043	48.7		98.4	58466	
4 Perfluoroper			0.044	1 000	E / 4440 /	40.0			0004	
262.90 > 219.00 D 47 13C3-PFB		1.783	-0.011	1.000	5641136	49.8			3901	
301.90 > 83.00		1.806	-0.015		135099	NC			6294	
5 Perfluorobut	anesulfo	nic acid								
298.90 > 80.00		1.808	-0.008	1.000	9947970	46.8	2.45(0.00.0.00)		6044	
298.90 > 99.00 61 Sodium 1H,	1.800	1.808	-0.008	1.000	4053649		2.45(0.00-0.00)		5716	
327.00 > 307.00		2.026		1.000	2214227	47.1			62916	
D 7 13C2 PFHx	κA									
315.00 > 270.00		2.070	-0.019		4854529	48.0		96.9	43967	
6 Perfluorohex 313.00 > 269.00		id 2.070	0.010	1.000	5163031	55.3			12217	
10 Perfluorohe			-0.017	1.000	3103031	55.5			12217	
363.00 > 319.00	•		-0.026	1.000	4536570	52.9			9182	
D 913C4-PFH _F										
367.00 > 322.00					4138864	49.4		99.7	31909	
8 Perfluorohex 399.00 > 80.00		onic acid 2.436		1.000	7104884	46.0			5948	
D 11 1802 PFH		2.100	3.020		, 10 100 1	10.0			3710	
403.00 > 84.00		2.436	-0.026		6687377	48.7		104	38252	
					Page 771 of 1	104				

 Report Date: 24-Jul-2017 11:24:58
 Chrom Revision: 2.2 26-Jun-2017 08:09:44

 Data File:
 \\ChromNa\Sacramento\ChromData\A8_N\20170723-45765.b\2017.07.23ICAL_012.d

Data File.	WOIIIO	ııııva\3c	ici amem	U/CHIOH	Dala\H0_ \\\2U	10123-4370	3.b\2017.07.23ICA	L_U1Z.U		
Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
* 62 13C2-PFOA 415.00 > 370.00		2.740	0.015		3952651	49.5			29094	_
D 12 M2-6:2FTS 429.00 > 409.00		2.766	-0.032		2275109	47.8		102	26630	
13 Sodium 1H, 427.00 > 407.00		•			2003870	46.2			29733	
D 14 13C4 PFO. 417.00 > 372.00		2.793	-0.038		3822549	46.5		94.0	25867	
15 Perfluorooct 413.00 > 369.00 413.00 > 169.00	2.755	id 2.794 2.794		1.000 1.000	4375657 2634902	53.1	1.66(0.90-1.10)		961 9356	
16 Perfluorohe 449.00 > 80.00				1.000	5872747	50.0			29182	
17 Perfluorooct 499.00 > 80.00 499.00 > 99.00	3.139	onic acio 3.176 3.176	-0.037	1.000 1.000	4909280 1181748	44.3	4.15(0.90-1.10)		9141 30493	
D 18 13C4 PFO		3.176	-0.046		4959566	45.8		96.9	16401	
20 Perfluorono 463.00 > 419.00			-0.041	1.000	3161857	51.4			6471	
D 19 13C5 PFNA 468.00 > 423.00		3.180	-0.041		2991774	45.5		91.9	14380	
D 21 13C8 FOS		3.505	-0.026		8018503	43.9		88.6	11595	
22 Perfluorooct 498.00 > 78.00				1.000	8063599	55.2			10088	
D 26 M2-8:2FTS 529.00 > 509.00		3.528	-0.039		1689298	46.3		97.6	13263	
25 Sodium 1H, 527.00 > 507.00	3.489	-			1601777	49.4			13551	
D 23 13C2 PFD/ 515.00 > 470.00	3.499		-0.040		2734023	49.0		98.9	8870	
24 Perfluorode 513.00 > 469.00	3.499		-0.043	1.000	2791767	51.6			6700	
D 27 d3-NMeFO 573.00 > 419.00	3.648				1008115	46.4		93.7	7202	
28 N-methyl pe 570.00 > 419.00	3.658	3.701	-0.043	1.003	1011987	54.6			9641	
29 Perfluorode 599.00 > 80.00		fonic act		1.000	3587023	55.0			12345	
D 32 d5-NEtFOS 589.00 > 419.00		3.866	-0.044		1064638	48.5		98.1	2996	
D 30 13C2 PFUi 565.00 > 520.00		3.875	-0.053		1901809	46.7		94.3	7443	
31 Perfluoroun 563.00 > 519.00			-0.053	1.000	2025287	51.3			4445	
33 N-ethyl perfl 584.00 > 419.00				1.000	1002156 Page 772 of 1	104 ^{54.9}			9280	

Data File:	\\Chrc	ChromNa\Sacramento\ChromData\A8_N\20170723-45765.b\2017.07.23ICAL_012.d										
Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags		
D 34 d-N-MeFOS	SA-M											
515.00 > 169.00	3.964	3.986	-0.022		2307684	49.0		98.9	767			
35 MeFOSA												
512.00 > 169.00	3.972	3.992	-0.020	1.000	2161659	50.5			5975			
37 Perfluorodoo		acid										
613.00 > 569.00		4.168	-0.044	1.000	2007680	57.3			1954			
D 36 13C2 PFDc			0.045		10/7074	44.0		0.4.5	==			
615.00 > 570.00		4.169	-0.045		1867874	41.8		84.5	5563			
D 38 d-N-EtFOS 531.00 > 169.00		4 172	0.015		2242075	46.3		02.4	E002			
		4.173			2262075	40.3		93.6	5002			
39 N-ethylperflu 526.00 > 169.00				1.000	2354694	55.6			5831			
41 Perfluorotrid			-0.020	1.000	2334074	33.0			3031			
663.00 > 619.00			-0.045	1.000	1846525	57.5			652			
D 43 13C2-PFTe												
715.00 > 670.00		4.676	-0.052		3681293	45.3		91.6	14361			
42 Perfluorotetr	adecan	oic acid										
712.50 > 668.90	4.624	4.676	-0.052	1.000	4067134	56.1			337			
713.00 > 169.00	4.624	4.676	-0.052	1.000	538736		7.55(0.00-0.00)		5878			
D 44 13C2-PFH												
815.00 > 770.00		5.091	-0.048		1728082	41.8		84.5	4254			
45 Perfluorohex			0.040	1 000	4/07544	E 4 0			04.4			
813.00 > 769.00		5.092	-0.049	1.000	1637541	54.2			314			
46 Perfluorooct			0.0/1	1 000	1575707	Γ4./			//0			
913.00 > 869.00	5.397	5.458	-0.061	1.000	1575707	54.6			669			
QC Flag Leg	,											

Processing Flags NC - Not Calibrated

Reagents:

LCPFCIC_FULL_00003 Amount Added: 1.00 Units: mL

Report Date: 24-Jul-2017 11:24:58 Chrom Revision: 2.2 26-Jun-2017 08:09:44 TestAmerica Sacramento Data File: **Injection Date:** 23-Jul-2017 14:12:14 Instrument ID: A8_N Lims ID: ICV Full Client ID: Operator ID: SACINSTLCMS01 ALS Bottle#: 36 Worklist Smp#: 12 Injection Vol: 2.0 ul Dil. Factor: 1.0000 Method: Limit Group: LC PFC_DOD ICAL $A8_N$ 2 Perfluorobutyric acid D 113C4 PFBA D 313C5-PFPeA Exp1:m/z 217.00 > 172.00:Moving5PtAverage_x Exp1:m/z 212.90 > 169.00:Moving5PtAverage_x Exp1:m/z 267.90 > 223.00:Moving5PtAverage_x 00024 00024 ×20 (35-000) 036 030 ×25 **≻**20 **≻**16′ 18 12 15 10 1.2 1.5 1.9 1.1 1.4 1.7 2.0 0.9 1.8 2.1 1.0 1.3 1.6 2.2 2.5 5 Perfluorobutanesulfonic acid 5 Perfluorobutanesulfonic acid 4 Perfluoropentanoic acid Exp1:m/z 262.90 > 219.00:Moving5PtAverage_x Exp1:m/z 298.90 > 80.00:Moving5PtAverage_x3 Exp1:m/z 298.90 > 99.00:Moving5PtAverage_x3 21- 00018-15-00024 00024 ×20 0642 0635 -28-21 2.5 1.3 1.9 2.2 2.0 2.3 0.9 1.2 1.8 2.1 2.4 1.0 1.6 1.1 1.4 1.5 2.7 61 Sodium 1H,1H,2H,2H-perfluorohexable 7 13C2 PFHxA 6 Perfluorohexanoic acid Exp1:m/z 327.00 > 307.00:Moving5PtAverage_x Exp1:m/z 315.00 > 270.00:Moving5PtAverage_> Exp1:m/z 313.00 > 269.00:Moving5PtAverage_x × (×100000) ©21- 0018-©21**-**0218-×15 ×15 0.9 1.5 2.1 2.7 1.5 1.8 2.1 2.7 1.5 1.8 2.1 2.4 2.4 2.7 1.2 9 13C4-PFHpA 8 Perfluorohexanesulfonic acid 10 Perfluoroheptanoic acid Exp1:m/z 399.00 > 80.00:Moving5PtAverage_x3 Exp1:m/z 363.00 > 319.00:Moving5PtAverage_x Exp1:m/z 367.00 > 322.00:Moving5PtAverage_x (0000018 (0000015 (x)) 630 00 25 (018-100015-15 10 0 0| 0 2.0 2.3 2.9 1.7 2.9 2.0 2.3 2.6 2.9 1.7 2.6 1.7

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170723-45765.b\2017.07.23ICAL_012.d D 11 1802 PFHxS 62 13C2-PFOA Exp1:m/z 415.00 > 370.00:Moving5PtAverage_x | Exp1:m/z 429.00 > 409.00:Moving5PtAverage_x Exp1:m/z 403.00 > 84.00:Moving5PtAverage_x3 Y (X100000) ©28-0024-(000015⁻ X) <u>≻</u>20 2.9 2.9 2.7 2.0 2.3 2.6 3.2 2.0 2.3 2.6 3.2 3.5 2.1 2.4 3.0 3.3 1.7 13 Sodium 1H,1H,2H,2H-perfluoroocta De 14 13C4 PFOA 15 Perfluorooctanoic acid Exp1:m/z 427.00 > 407.00:Moving5PtAverage_x Exp1:m/z 417.00 > 372.00:Moving5PtAverage_x Exp1:m/z 413.00 > 369.00:Moving5PtAverage_> (18-000015- ⁷⁷ Σ_{55} 33 22 11-2.7 2.4 3.0 3.3 2.4 3.3 2.4 3.3 3.0 3.0 15 Perfluorooctanoic acid 16 Perfluoroheptanesulfonic Acid 17 Perfluorooctane sulfonic acid Exp1:m/z 413.00 > 169.00:Moving5PtAverage_x Exp1:m/z 449.00 > 80.00:Moving5PtAverage_x3 Exp1:m/z 499.00 > 80.00:Moving5PtAverage_x3 (000018 (000018 (000018 60000 00020 (X100000). 3.2 2.0 2.3 2.9 3.2 3.5 2.0 2.3 2.6 2.9 3.5 2.5 2.8 3.1 3.7 4.0 2.6 3.4 17 Perfluorooctane sulfonic acid D 18 13C4 PFOS 20 Perfluorononanoic acid Exp1:m/z 499.00 > 99.00:Moving5PtAverage_x3 Exp1:m/z 503.00 > 80.00:Moving5PtAverage_x3 Exp1:m/z 463.00 > 419.00:Moving5PtAverage_> (12° ×) ×) × (100000) ×) × (10° ×) (21-000018-X15-<u></u>
∠28 21 0.9 2.1 3.3 4.5 2.4 2.7 3.0 3.3 3.6 3.9 2.4 2.7 3.0 3.3 3.6 3.9

Chrom Revision: 2.2 26-Jun-2017 08:09:44

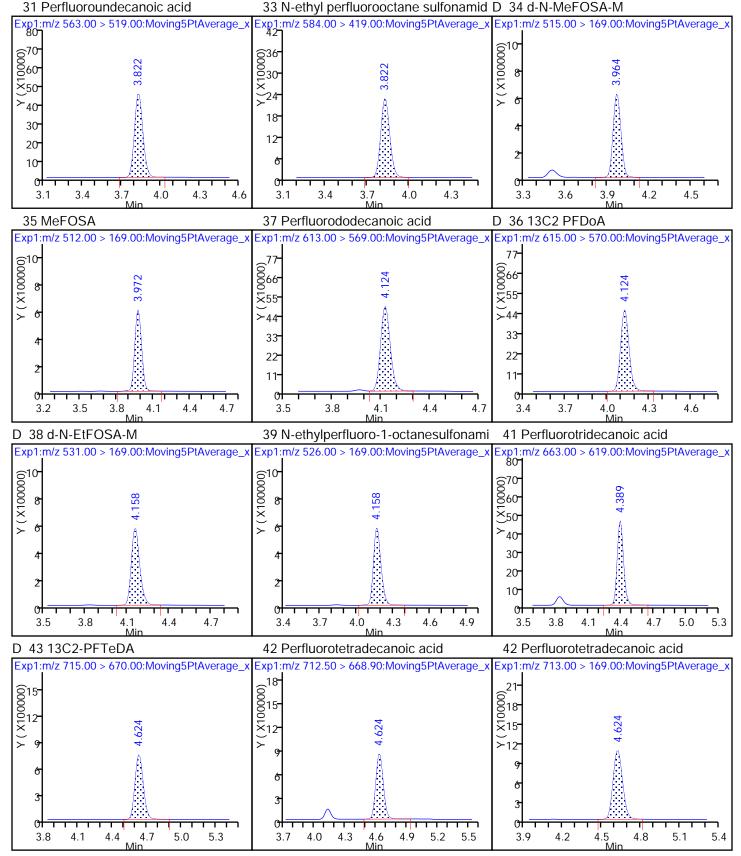
Report Date: 24-Jul-2017 11:24:58

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170723-45765.b\2017.07.23ICAL_012.d D 19 13C5 PFNA D 21 13C8 FOSA 22 Perfluorooctane Sulfonamide Exp1:m/z 498.00 > 78.00:Moving5PtAverage_x3 Exp1:m/z 468.00 > 423.00:Moving5PtAverage_x Exp1:m/z 506.00 > 78.00:Moving5PtAverage_x3 (12 X) X) X (100000) X) X (12 X) ©30 00 25 0030 000025 × 20 $\stackrel{\cdot}{\sim}_{20}$ 20 15 15 10 10 3.1 3.9 2.5 2.8 3.4 3.7 2.7 3.0 3.3 3.6 4.2 2.9 3.2 3.5 3.8 4.1 2.6 25 Sodium 1H,1H,2H,2H-perfluorodecaDe23 13C2 PFDA D 26 M2-8:2FTS Exp1:m/z 515.00 > 470.00:Moving5PtAverage_x Exp1:m/z 527.00 > 507.00:Moving5PtAverage_x 641 Exp1:m/z 529.00 > 509.00:Moving5PtAverage_x (X100000) (X1000000) 63 00 54 656 648 ×45 ×₄₀ ≻₃₆-≻₃₂ 27 24 18 16 3.7 3.7 3.0 3.3 3.6 3.1 4.0 3.1 3.4 4.0 3.9 24 Perfluorodecanoic acid D 27 d3-NMeFOSAA 28 N-methyl perfluorooctane sulfonami Exp1:m/z 513.00 > 469.00:Moving5PtAverage_x Exp1:m/z 573.00 > 419.00:Moving5PtAverage_> Exp1:m/z 570.00 > 419.00:Moving5PtAverage_x 42 42 (X100000). ×30-×30-18 18 12 12 0 0 3.0 3.3 3.9 2.9 3.2 3.5 3.8 3.2 3.5 3.8 2.7 3.6 4.2 4.1 4.4 2.9 4.1 4.4 29 Perfluorodecane Sulfonic acid D 30 13C2 PFUnA D 32 d5-NEtFOSAA Exp1:m/z 599.00 > 80.00:Moving5PtAverage_x3 Exp1:m/z 589.00 > 419.00:Moving5PtAverage_x Exp1:m/z 565.00 > 520.00:Moving5PtAverage_x (0000012⁻ ×) > 9 (70⁻ (060 036 036 ₹30 ×50 **≻**24 ≻40 18 30 12 20 10 3.0 3.3 3.6 3.9 4.2 4.5 3.2 3.5 3.8 4.1 4.4 3.4 3.7 4.0 4.3 3.1

Chrom Revision: 2.2 26-Jun-2017 08:09:44

Report Date: 24-Jul-2017 11:24:58

Report Date: 24-Jul-2017 11:24:58 Chrom Revision: 2.2 26-Jun-2017 08:09:44 Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170723-45765.b\2017.07.23ICAL_012.d



Report Date: 24-Jul-2017 11:24:58 Chrom Revision: 2.2 26-Jun-2017 08:09:44 Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170723-45765.b\2017.07.23ICAL_012.d

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46 Perfluorooctadecanoic acid 45 Perfluorohexadecanoic acid D 44 13C2-PFHxDA Exp1:m/z 815.00 > 770.00:Moving5PtAverage_x Exp1:m/z 813.00 > 769.00:Moving5PtAverage_x Exp1:m/z 913.00 > 869.00:Moving5PtAverage_x 63 77-(00066-(00555-(70-0060-X50-5.397 (00054-1245-1245-∑ ≻44 ≻₄₀ ≻36- 27 33 30 22 18 20 11 10

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Lab Name: TestAmerica Sacramento Job No.: 320-29732-1

SDG No.:

Lab Sample ID: <u>CCV 320-175528/1</u> Calibration Date: <u>07/23/2017 14:32</u>

Instrument ID: A8_N Calib Start Date: 07/23/2017 13:10

GC Column: GeminiC18 3×100 ID: 3.00 (mm) Calib End Date: 07/23/2017 13:58

Lab File ID: 2017.07.23A_001.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanoic acid (PFBA)	AveID	0.8820	0.9494		21.5	20.0	7.6	25.0
Perfluoropentanoic acid (PFPeA)	AveID	1.042	0.9792		18.8	20.0	-6.0	25.0
Perfluorobutanesulfonic acid (PFBS)	AveID	1.489	1.501		17.8	17.7	0.8	25.0
Perfluorohexanoic acid (PFHxA)	AveID	0.9521	0.9645		20.3	20.0	1.3	25.0
Perfluoroheptanoic acid (PFHpA)	AveID	1.026	1.025		20.0	20.0	-0.1	25.0
Perfluorohexanesulfonic acid (PFHxS)	AveID	1.082	1.015		17.1	18.2	-6.2	25.0
6:2FTS	AveID	0.8958	0.9016		19.1	19.0	0.6	25.0
Perfluoroheptanesulfonic Acid (PFHpS)	AveID	1.122	1.185		20.1	19.0	5.6	25.0
Perfluorooctanoic acid (PFOA)	AveID	1.067	1.072		20.1	20.0	0.5	25.0
Perfluorooctanesulfonic acid (PFOS)	AveID	1.057	1.023		18.0	18.6	-3.2	25.0
Perfluorononanoic acid (PFNA)	AveID	1.018	0.9787		19.2	20.0	-3.9	25.0
8:2FTS	AveID	0.9107	0.9893		20.8	19.2	8.6	25.0
Perfluorooctane Sulfonamide (FOSA)	AveID	0.9018	0.9496		21.1	20.0	5.3	25.0
Perfluorodecanoic acid (PFDA)	AveID	0.9799	0.9576		19.5	20.0	-2.3	25.0
N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA)	AveID	0.9100	0.9797		21.5	20.0	7.7	25.0
Perfluorodecanesulfonic acid (PFDS)	AveID	0.6225	0.6356		19.7	19.3	2.1	25.0
N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)	AveID	0.8488	0.8613		20.3	20.0	1.5	25.0
Perfluoroundecanoic acid (PFUnA)	L2ID		0.9846		19.1	20.0	-4.5	25.0
MeFOSA	AveID	0.9183	0.9054		19.7	20.0	-1.4	25.0
Perfluorododecanoic acid (PFDoA)	AveID	0.9292	0.8874		19.1	20.0	-4.5	25.0
N-EtFOSA-M	AveID	0.9274	0.8972		19.3	20.0	-3.3	25.0
Perfluorotridecanoic Acid (PFTriA)	AveID	0.8514	0.8317		19.5	20.0	-2.3	25.0
Perfluorotetradecanoic acid (PFTeA)	AveID	1.922	1.773		18.4	20.0	-7.8	25.0
Perfluoro-n-hexadecanoic acid (PFHxDA)	L2ID		0.8414		20.6	20.0	2.9	25.0
Perfluoro-n-octadecanoic acid (PFODA)	AveID	0.7652	0.7982		20.9	20.0	4.3	25.0
13C4 PFBA	Ave	156025	165858		53.2	50.0	6.3	50.0
13C5 PFPeA	Ave	110496	115893		52.4	50.0	4.9	50.0
13C2 PFHxA	Ave	101156	100943		49.9	50.0	-0.2	50.0
13C4-PFHpA	Ave	83824	86101		51.4	50.0	2.7	50.0
1802 PFHxS	Ave	137438	143304		49.3	47.3	4.3	50.0
M2-6:2FTS	Ave	47560	46861		46.8	47.5	-1.5	50.0

Lab Name: TestAmerica Sacramento Job No.: 320-29732-1

SDG No.:

Lab Sample ID: <u>CCV 320-175528/1</u> Calibration Date: <u>07/23/2017 14:32</u>

Instrument ID: <u>A8_N</u> Calib Start Date: 07/23/2017 13:10

GC Column: GeminiC18 3×100 ID: 3.00 (mm) Calib End Date: 07/23/2017 13:58

Lab File ID: 2017.07.23A_001.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE CF	CF	MIN CF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
13C4 PFOA	Ave	82143	85050		51.8	50.0	3.5	50.0
13C4 PFOS	Ave	108200	109417		48.3	47.8	1.1	50.0
13C5 PFNA	Ave	65740	69516		52.9	50.0	5.7	50.0
13C8 FOSA	Ave	182802	182496		49.9	50.0	-0.2	50.0
M2-8:2FTS	Ave	36500	34084		44.7	47.9	-6.6	50.0
13C2 PFDA	Ave	55836	57163		51.2	50.0	2.4	50.0
d3-NMeFOSAA	Ave	21732	20701		47.6	50.0	-4.7	50.0
13C2 PFUnA	Ave	40729	39583		48.6	50.0	-2.8	50.0
d5-NEtFOSAA	Ave	21931	21686		49.4	50.0	-1.1	50.0
d-N-MeFOSA-M	Ave	47115	45773		48.6	50.0	-2.8	50.0
13C2 PFDoA	Ave	44655	41237		46.2	50.0	-7.7	50.0
d-N-EtFOSA-M	Ave	48834	48692		49.9	50.0	-0.3	50.0
13C2-PFTeDA	Ave	81216	74066		45.6	50.0	-8.8	50.0
13C2-PFHxDA	Ave	41307	39421		47.7	50.0	-4.6	50.0

Report Date: 24-Jul-2017 12:07:17 Chrom Revision: 2.2 26-Jun-2017 08:09:44

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170724-45776.b\2017.07.23A_001.d

Lims ID: CCV L4

Client ID:

Sample Type: CCV

Inject. Date: 23-Jul-2017 14:32:56 ALS Bottle#: 31 Worklist Smp#: 1

Injection Vol: 2.0 ul Dil. Factor: 1.0000

Sample Info: CCV L4

Misc. Info.: Plate: 1 Rack: 1

Operator ID: SACINSTLCMS01 Instrument ID: A8_N

Sublist: chrom-A8_N*sub18

Method: \ChromNa\Sacramento\ChromData\A8_N\20170724-45776.b\A8_N.m

Limit Group: LC PFC_DOD ICAL

Last Update: 24-Jul-2017 12:07:17 Calib Date: 23-Jul-2017 13:58:26

Integrator: Picker

Quant Method: Isotopic Dilution Quant By: Initial Calibration

Last ICal File: \ChromNA\Sacramento\ChromData\A8_N\20170723-45765.b\2017.07.23ICAL_010.d

Column 1: Det: EXP1

Process Host: XAWRK004

Process Host: XAWRK004										
Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
2 Perfluorobuty	yric acid									
212.90 > 169.00	,	1.556	0.0	1.000	3149223	21.5		108	1910	
D 113C4 PFBA										
217.00 > 172.00		1.556	0.0		8292923	53.2		106	45838	
4 Perfluoropen				1 000	00/05/0	10.0		0.4.0	4500	
262.90 > 219.00		1.775	0.0	1.000	2269540	18.8		94.0	1530	
D 3 13C5-PFPe 267.90 > 223.00		1.775	-0.009		5794627	52.4		105	71537	
D 47 13C3-PFBS		1.773	-0.009		3794027	32.4		103	/103/	
301.90 > 83.00		1.793	0.0		140162	NC			8081	
5 Perfluorobuta										
298.90 > 80.00			-0.009	1.000	3801969	17.8		101	2351	
298.90 > 99.00	1.793	1.802	-0.009	1.000	1506976		2.52(0.00-0.00)		2278	
61 Sodium 1H,		•								
327.00 > 307.00			-0.011	1.000	830836	18.3		97.7	27609	
6 Perfluorohex			0.001	1 000	1047120	20.2		101	/ 452	
313.00 > 269.00		2.055	-0.001	1.000	1947130	20.3		101	6453	
D 7 13C2 PFHx 315.00 > 270.00		2.055	-0.001		5047173	49.9		99.8	50154	
10 Perfluorohe			-0.001		3047173	47.7		77.0	30134	
363.00 > 319.00			-0.003	1.000	1765612	20.0		99.9	6521	
D 913C4-PFHp										
367.00 > 322.00		2.403	-0.003		4305065	51.4		103	27217	
8 Perfluorohex	anesulfo	nic acid								
399.00 > 80.00	2.408	2.419	-0.011	1.000	2646085	17.1		93.8	3042	
D 11 1802 PFH	xS									
403.00 > 84.00	2.408	2.419	-0.011		6778291	49.3		104	35577	
13 Sodium 1H,										
427.00 > 407.00	2.740	2.742	-0.002	1.000	801031 Page 781 of 1	19.1 104		101	21635	
					5					

Report Date: 24-Jul-2017 12:07:17 Chrom Revision: 2.2 26-Jun-2017 08:09:44

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170724-45776.b\2017.07.23A_001.d										
Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 12 M2-6:2FTS 429.00 > 409.00		2.742	-0.002		2225896	46.8		98.5	31182	
* 62 13C2-PFOA 415.00 > 370.00		2.764	-0.002		4107866	50.0		100	32844	
15 Perfluorooc 413.00 > 369.00 413.00 > 169.00	2.769	2.771 2.771	-0.002 -0.002	1.000 1.000	1823384 1088554	20.1	1.68(0.90-1.10)	100	415 7761	
D 14 13C4 PFO 417.00 > 372.00	2.769		-0.002		4252479	51.8		104	25862	
16 Perfluorohe 449.00 > 80.00	-	fonic Ac 2.778		1.000	2468039	20.1		106	21590	
17 Perfluorooc 499.00 > 80.00 499.00 > 99.00	3.144 3.144	3.151 3.151	d -0.007 -0.007	1.000 1.000	2077947 430439	18.0	4.83(0.90-1.10)	96.8	8086 3689	
20 Perfluorono 463.00 > 419.00	3.153	cid 3.151	0.002	1.000	1360672	19.2		96.1	4505	
D 18 13C4 PFO 503.00 > 80.00	3.144	3.151	-0.007		5230128	48.3		101	22994	
D 19 13C5 PFN 468.00 > 423.00	3.144		-0.007		3475812	52.9		106	23497	
25 Sodium 1H, 527.00 > 507.00 D 26 M2-8:2FTS	3.499	н-репіц 3.497		1.000	646049	20.8		109	14508	
529.00 > 509.00 D 21 13C8 FOS	3.499	3.497	0.002		1632616	44.7		93.4	18170	
506.00 > 78.00 22 Perfluorooc	3.499		-0.008		9124786	49.9		99.8	15441	
498.00 > 78.00 D 23 13C2 PFD	3.499			1.000	3465891	21.1		105	10304	
515.00 > 470.00 24 Perfluorode	3.508	3.507 cid	0.001		2858125	51.2		102	9221	
513.00 > 469.00 D 27 d3-NMeFC	3.508	3.507	0.001	1.000	1094818	19.5		97.7	4588	
573.00 > 419.00 28 N-methyl pe	3.663	3.658 ctane su	0.005 Ilfonami		1035044	47.6		95.3	9082	
570.00 > 419.00 29 Perfluorode	3.663	3.669	-0.006	1.000	405591	21.5		108	7724	
599.00 > 80.00 D 32 d5-NEtFO	3.817	3.815	0.002	1.000	1340813	19.7		102	12500	
589.00 > 419.00 31 Perfluoroun	3.835	3.824	0.011		1084322	49.4		98.9	3153	
563.00 > 519.00 33 N-ethyl perf	3.835	3.833	0.002	1.000	779495	19.1		95.5	1926	
584.00 > 419.00 D 30 13C2 PFU	3.835	3.833	0.002	1.000	373576	20.3		101	5766	
565.00 > 520.00 D 34 d-N-MeFO	3.835	3.833	0.002		1979174	48.6		97.2	9766	
515.00 > 169.00		3.993	-0.010		Page 782 ⁷ of 1	104 48.6		97.2	766	

Report Date: 24-Jul-2017 12:07:17
Data File: \ChromNa\Sac Chrom Revision: 2.2 26-Jun-2017 08:09:44 \\ChromNa\Sacramento\ChromData\A8_N\20170724-45776 b\2017 07 23A_001 d

Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20170724-45776.b\2017.07.23A_001.d									
Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
35 MeFOSA										
512.00 > 169.00 3	3.991	3.993	-0.002	1.000	828845	19.7		98.6	5608	
37 Perfluorodode	ecanoic	acid								
613.00 > 569.00 4	4.129	4.123	0.006	1.000	731876	19.1		95.5	525	
D 36 13C2 PFDoA										
615.00 > 570.00 4		4.123	0.006		2061840	46.2		92.3	7851	
D 38 d-N-EtFOSA		1 171	0.000		2424/21	40.0		00.7	F040	
531.00 > 169.00 4		4.174			2434621	49.9		99.7	5040	
39 N-ethylperfluc 526.00 > 169.00 4				1.000	873698	19.3		96.7	4762	
41 Perfluorotride			-0.003	1.000	073070	17.5		70.7	4702	
663.00 > 619.00 4		4.388	0.009	1.000	685950	19.5		97.7	206	
D 43 13C2-PFTeD										
715.00 > 670.00 4		4.619	0.019		3703293	45.6		91.2	16748	
42 Perfluorotetra	decano	oic acid								
712.50 > 668.90 4		4.630	0.007	1.000	1461845	18.4		92.2	123	
713.00 > 169.00 4		4.630	-0.004	0.998	212766		6.87(0.00-0.00)		3119	
45 Perfluorohexa										
813.00 > 769.00 5		5.030	0.023	1.000	693899	20.6		103	137	
D 44 13C2-PFHxE		F 020	0.012		10710/5	47.7		OF 4	F100	
815.00 > 770.00 5		5.030	0.013		1971065	47.7		95.4	5180	
46 Perfluoroocta 913.00 > 869.00 5			0.016	1.000	658294	20.9		104	278	
		0.001	5.010	1.000	030274	20.7		104	210	
QC Flag Lege										

Processing Flags

NC - Not Calibrated

Reagents:

LCPFC_FULL-L4_00008 Amount Added: 1.00 Units: mL

Report Date: 24-Jul-2017 12:07:17 Chrom Revision: 2.2 26-Jun-2017 08:09:44 TestAmerica Sacramento Data File: \ChromNa\Sacramento\ChromData\A8_N\20170724-45776.b\2017.07.23A_001.d **Injection Date:** 23-Jul-2017 14:32:56 Instrument ID: A8_N Lims ID: CCV L4 Client ID: Operator ID: SACINSTLCMS01 ALS Bottle#: 31 Worklist Smp#: Injection Vol: 2.0 ul Dil. Factor: 1.0000 Method: Limit Group: LC PFC_DOD ICAL $A8_N$ 4 Perfluoropentanoic acid 2 Perfluorobutyric acid D 113C4 PFBA Exp1:m/z 212.90 > 169.00:Moving5PtAverage_x Exp1:m/z 217.00 > 172.00:Moving5PtAverage_x Exp1:m/z 262.90 > 219.00:Moving5PtAverage_x (42⁻ 00036⁻ ×30 (0000015 X) > 9 (X100000) 8 18 12 1.2 1.5 1.3 1.9 0.9 1.8 2.1 1.1 1.4 2.0 2.3 1.0 1.6 2.2 2.5 5 Perfluorobutanesulfonic acid 5 Perfluorobutanesulfonic acid D 3 13C5-PFPeA Exp1:m/z 267.90 > 223.00:Moving5PtAverage_x Exp1:m/z 298.90 > 80.00:Moving5PtAverage_x3 Exp1:m/z 298.90 > 99.00:Moving5PtAverage x3 (0000015-(0000015-70⁻ (00001 20-20-∑50 30 20 10 2.5 1.3 1.9 2.2 1.4 2.0 2.3 1.5 1.8 1.0 1.6 1.1 2.1 2.4 1.2 61 Sodium 1H,1H,2H,2H-perfluorohexan& Perfluorohexanoic acid 7 13C2 PFHxA Exp1:m/z 327.00 > 307.00:Moving5PtAverage_x Exp1:m/z 313.00 > 269.00:Moving5PtAverage_ Exp1:m/z 315.00 > 270.00:Moving5PtAverage_x 24 (00020 ×16 684- 672-<u>8</u>36 00 × × × 24 ×60 ≻₄₈-18 36 24 12 1.8 2.1 1.8 2.1 2.7 1.7 2.0 1.5 2.4 1.5 2.4 1.4 2.3 2.6 1.2 8 Perfluorohexanesulfonic acid 10 Perfluoroheptanoic acid 9 13C4-PFHpA Exp1:m/z 367.00 > 322.00:Moving5PtAverage_x Exp1:m/z 363.00 > 319.00:Moving5PtAverage_> Exp1:m/z 399.00 > 80.00:Moving5PtAverage_x3 91- 000015-X 670 660 ×65 ×50 >₄₀ **≻**52 39 30 26 20 13 10 0 0 01.9 2.2 2.5 2.8 3.1 1.7 2.9 1.9 2.2 2.5 2.8 3.1 2.0 Page 784 rof 1104 1.6 1.6

Report Date: 24-Jul-2017 12:07:17 Chrom Revision: 2.2 26-Jun-2017 08:09:44 Data File: \ChromNa\Sacramento\ChromData\A8_N\20170724-45776.b\2017.07.23A_001.d D 11 1802 PFHxS 13 Sodium 1H,1H,2H,2H-perfluorooctabe 12 M2-6:2FTS Exp1:m/z 429.00 > 409.00:Moving5PtAverage_x Exp1:m/z 403.00 > 84.00:Moving5PtAverage_x3 Exp1:m/z 427.00 > 407.00:Moving5PtAverage_x (28 (00001× (20 (28 (20) (28) 630 625 ×20. 48 15 12 36 10 24 12 1.9 2.9 2.7 2.2 2.5 2.8 3.1 2.0 2.3 2.6 3.2 3.5 2.1 2.4 3.0 3.3 1.6 62 13C2-PFOA 15 Perfluorooctanoic acid 15 Perfluorooctanoic acid Exp1:m/z 415.00 > 370.00:Moving5PtAverage_x Exp1:m/z 413.00 > 369.00:Moving5PtAverage_x Exp1:m/z 413.00 > 169.00:Moving5PtAverage_> (0000015⁻ 12⁻ 29 642 636 555 $\times 30$ 33 18 22 12 11 2.7 2.3 2.9 3.2 2.9 3.2 2.4 3.3 2.6 3.0 16 Perfluoroheptanesulfonic Acid D 14 13C4 PFOA 17 Perfluorooctane sulfonic acid Exp1:m/z 449.00 > 80.00:Moving5PtAverage_x3 Exp1:m/z 499.00 > 80.00:Moving5PtAverage_x3 Exp1:m/z 417.00 > 372.00:Moving5PtAverage_> (X100000) (0000012 X) 0054 ×45 **≻**36 27 18 0 2.4 2.7 3.0 3.3 2.3 2.6 2.9 3.2 3.5 3.0 4.2 2.1 2.0 1.8 2.4 3.6 D 18 13C4 PFOS 17 Perfluorooctane sulfonic acid 20 Perfluorononanoic acid Exp1:m/z 499.00 > 99.00:Moving5PtAverage_x3 Exp1:m/z 503.00 > 80.00:Moving5PtAverage_x3 Exp1:m/z 463.00 > 419.00:Moving5PtAverage_x ©21 00 18 (00012 X) X 8 **∑**35 ≻28 21

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Report Date: 24-Jul-2017 12:07:17 Chrom Revision: 2.2 26-Jun-2017 08:09:44 Data File: \ChromNa\Sacramento\ChromData\A8_N\20170724-45776.b\2017.07.23A_001.d D 19 13C5 PFNA 25 Sodium 1H,1H,2H,2H-perfluorodecabe26 M2-8:2FTS Exp1:m/z 468.00 > 423.00:Moving5PtAverage_x Exp1:m/z 527.00 > 507.00:Moving5PtAverage_x Exp1:m/z 529.00 > 509.00:Moving5PtAverage_x 63 (X100000) X (X1000000) 8 (0001×) 16 -36 12 27 8 18 2.9 3.2 3.4 2.3 2.6 3.5 3.8 2.8 3.1 3.7 4.0 2.8 3.1 3.4 3.7 4.0 D 21 13C8 FOSA 22 Perfluorooctane Sulfonamide D 23 13C2 PFDA Exp1:m/z 515.00 > 470.00:Moving5PtAverage_> Exp1:m/z 506.00 > 78.00:Moving5PtAverage_x3 Exp1:m/z 498.00 > 78.00:Moving5PtAverage_x3 (000012 1000012 (35 0030 ×25 (X100000) 8 6 15 10 3.5 2.9 3.2 3.0 3.9 3.0 3.3 3.6 3.3 3.6 3.9 24 Perfluorodecanoic acid D 27 d3-NMeFOSAA 28 N-methyl perfluorooctane sulfonami Exp1:m/z 573.00 > 419.00:Moving5PtAverage_> Exp1:m/z 513.00 > 469.00:Moving5PtAverage_x Exp1:m/z 570.00 > 419.00:Moving5PtAverage_x 42 (000012 X 0036- X 30 36 18 18 12 0 0 3.4 4.0 2.9 3.2 3.5 3.8 3.3 3.6 3.9 4.2 2.8 3.1 3.7 4.1 4.4 3.0 29 Perfluorodecane Sulfonic acid D 32 d5-NEtFOSAA 31 Perfluoroundecanoic acid Exp1:m/z 563.00 > 519.00:Moving5PtAverage_> 42 28- (56⁻ (00048⁻ 00036 ×30 ×24 ×40 ×20 ≻₃₂-

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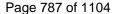
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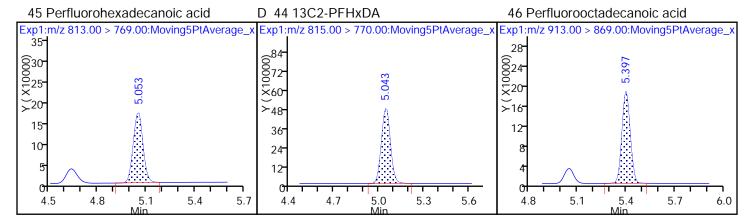
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Report Date: 24-Jul-2017 12:07:18 Chrom Revision: 2.2 26-Jun-2017 08:09:44

Data File: \ChromNa\Sacramento\ChromData\A8_N\20170724-45776.b\2017.07.23A_001.d



Lab Name: TestAmerica Sacramento Job No.: 320-29732-1

SDG No.:

Lab Sample ID: CCV 320-175528/12 Calibration Date: 07/23/2017 15:48

Instrument ID: A8_N Calib Start Date: 07/23/2017 13:10

GC Column: GeminiC18 3×100 ID: 3.00 (mm) Calib End Date: 07/23/2017 13:58

Lab File ID: 2017.07.23A_012.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanoic acid (PFBA)	AveID	0.8820	0.9029		51.2	50.0	2.4	25.0
Perfluoropentanoic acid (PFPeA)	AveID	1.042	1.006		48.3	50.0	-3.5	25.0
Perfluorobutanesulfonic acid (PFBS)	AveID	1.489	1.478		43.9	44.2	-0.7	25.0
Perfluorohexanoic acid (PFHxA)	AveID	0.9521	0.9398		49.4	50.0	-1.3	25.0
Perfluoroheptanoic acid (PFHpA)	AveID	1.026	0.9913		48.3	50.0	-3.4	25.0
Perfluorohexanesulfonic acid (PFHxS)	AveID	1.082	1.034		43.5	45.5	-4.4	25.0
6:2FTS	AveID	0.8958	0.8465		44.8	47.4	-5.5	25.0
Perfluorooctanoic acid (PFOA)	AveID	1.067	0.9815		46.0	50.0	-8.0	25.0
Perfluoroheptanesulfonic Acid (PFHpS)	AveID	1.122	1.119		47.5	47.6	-0.2	25.0
Perfluorononanoic acid (PFNA)	AveID	1.018	1.012		49.7	50.0	-0.6	25.0
Perfluorooctanesulfonic acid (PFOS)	AveID	1.057	1.023		44.9	46.4	-3.2	25.0
8:2FTS	AveID	0.9107	0.8344		43.9	47.9	-8.4	25.0
Perfluorodecanoic acid (PFDA)	AveID	0.9799	0.9414		48.0	50.0	-3.9	25.0
Perfluorooctane Sulfonamide (FOSA)	AveID	0.9018	0.9253		51.3	50.0	2.6	25.0
N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA)	AveID	0.9100	0.8838		48.6	50.0	-2.9	25.0
Perfluorodecanesulfonic acid (PFDS)	AveID	0.6225	0.5885		45.6	48.2	-5.5	25.0
N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)	AveID	0.8488	0.8455		49.8	50.0	-0.4	25.0
Perfluoroundecanoic acid (PFUnA)	L2ID		0.9582		46.6	50.0	-6.8	25.0
MeFOSA	AveID	0.9183	0.8759		47.7	50.0	-4.6	25.0
Perfluorododecanoic acid (PFDoA)	AveID	0.9292	0.8987		48.4	50.0	-3.3	25.0
N-EtFOSA-M	AveID	0.9274	0.9011		48.6	50.0	-2.8	25.0
Perfluorotridecanoic Acid (PFTriA)	AveID	0.8514	0.8566		50.3	50.0	0.6	25.0
Perfluorotetradecanoic acid (PFTeA)	AveID	1.922	1.865		48.5	50.0	-3.0	25.0
Perfluoro-n-hexadecanoic acid (PFHxDA)	L2ID		0.8124		50.6	50.0	1.3	25.0
Perfluoro-n-octadecanoic acid (PFODA)	AveID	0.7652	0.8180		53.5	50.0	6.9	25.0
13C4 PFBA	Ave	156025	168207		53.9	50.0	7.8	50.0
13C5 PFPeA	Ave	110496	115246		52.1	50.0	4.3	50.0
13C2 PFHxA	Ave	101156	101804		50.3	50.0	0.6	50.0
13C4-PFHpA	Ave	83824	86264		51.5	50.0	2.9	50.0
1802 PFHxS	Ave	137438	140919		48.5	47.3	2.5	50.0
M2-6:2FTS	Ave	47560	48401		48.3	47.5	1.8	50.0

Lab Name: TestAmerica Sacramento Job No.: 320-29732-1

SDG No.:

Lab Sample ID: CCV 320-175528/12 Calibration Date: 07/23/2017 15:48

Instrument ID: A8_N Calib Start Date: 07/23/2017 13:10

GC Column: GeminiC18 3×100 ID: 3.00 (mm) Calib End Date: 07/23/2017 13:58

Lab File ID: 2017.07.23A_012.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE CF	CF	MIN CF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
13C4 PFOA	Ave	82143	84609		51.5	50.0	3.0	50.0
13C4 PFOS	Ave	108200	110381		48.8	47.8	2.0	50.0
13C5 PFNA	Ave	65740	63063		48.0	50.0	-4.1	50.0
M2-8:2FTS	Ave	36500	36015		47.3	47.9	-1.3	50.0
13C2 PFDA	Ave	55836	53544		47.9	50.0	-4.1	50.0
13C8 FOSA	Ave	182802	180199		49.3	50.0	-1.4	50.0
d3-NMeFOSAA	Ave	21732	21364		49.2	50.0	-1.7	50.0
d5-NEtFOSAA	Ave	21931	20780		47.4	50.0	-5.2	50.0
13C2 PFUnA	Ave	40729	39142		48.1	50.0	-3.9	50.0
d-N-MeFOSA-M	Ave	47115	47791		50.7	50.0	1.4	50.0
13C2 PFDoA	Ave	44655	38225		42.8	50.0	-14.4	50.0
d-N-EtFOSA-M	Ave	48834	50866		52.1	50.0	4.2	50.0
13C2-PFTeDA	Ave	81216	80494		49.6	50.0	-0.9	50.0
13C2-PFH×DA	Ave	41307	38552		46.7	50.0	-6.7	50.0

Report Date: 24-Jul-2017 13:03:08 Chrom Revision: 2.2 26-Jun-2017 08:09:44

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170724-45776.b\2017.07.23A_012.d

Lims ID: CCV L5

Client ID:

Sample Type: CCV

Inject. Date: 23-Jul-2017 15:48:51 ALS Bottle#: 32 Worklist Smp#: 12

Injection Vol: 2.0 ul Dil. Factor: 1.0000

Sample Info: CCV L5

Misc. Info.: Plate: 1 Rack: 1

Operator ID: SACINSTLCMS01 Instrument ID: A8_N

Sublist: chrom-A8_N*sub18

Method: \ChromNa\Sacramento\ChromData\A8_N\20170724-45776.b\A8_N.m

Limit Group: LC PFC_DOD ICAL

Last Update: 24-Jul-2017 13:03:07 Calib Date: 23-Jul-2017 13:58:26

Integrator: Picker

Quant Method: Isotopic Dilution Quant By: Initial Calibration

Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20170723-45765.b\2017.07.23ICAL_010.d

Column 1: Det: EXP1

Process Host: XAWRK004

First Level Reviewer: chandrasenas Date: 24-Jul-2017 12:55:13

	First Level Reviewer, Chandrasenas					Date.		<u>, </u>			
	Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
2 Perfluorobutyric acid											
	212.90 > 169.00	•	1.556	0.0	1.000	7593280	51.2		102	3928	
	D 113C4 PFBA										
	217.00 > 172.00	1.556	1.556	0.0		8410354	53.9		108	38850	
	4 Perfluoropen										
	262.90 > 219.00		1.775	0.0	1.000	5797619	48.3		96.5	3967	
	D 3 13C5-PFPe		1 775	0.0		F7/2222	FO 1		104	/0577	
	267.90 > 223.00		1.775	0.0		5762322	52.1		104	68577	
	D 47 13C3-PFB9 301.90 > 83.00		1.793	0.0		137350	NC			5300	
	5 Perfluorobuta			0.0		137330	NO			3300	
	298.90 > 80.00		1.802	0.0	1.000	9207936	43.9		99.3	5523	
		1.802	1.802		1.000	3940927		2.34(0.00-0.00)		5383	
	61 Sodium 1H,	1H,2H,2	H-perflu	orohexar	ne						
	327.00 > 307.00	2.020	2.020	0.0	1.000	2217446	47.2		101	88996	
	6 Perfluorohex										
	313.00 > 269.00		2.055	0.0	1.000	4783774	49.4		98.7	13587	
	D 7 13C2 PFHx										
	315.00 > 270.00		2.055	0.0		5090224	50.3		101	44386	
	10 Perfluoroher			0.0	1 000	4075401	40.2		0/ /	0447	
	363.00 > 319.00		2.403	0.0	1.000	4275481	48.3		96.6	9446	
	D 9 13C4-PFHp 367.00 > 322.00		2.403	0.0		4313220	51.5		103	27309	
	8 Perfluorohex					4313220	31.3		103	27307	
	399.00 > 80.00		2.419		1.000	6628532	43.5		95.6	4683	
	D 11 18O2 PFH)		v						-		
	403.00 > 84.00		2.419	0.0		6665492	48.5		103	31559	
						Dogg 701 of 1	101				

Data File.	NCIIIC	iiiiva\3a	acrament	OCHION	Dala (Ao_IN (20 I	70724-4377	0.D\2017.U7.23A_U	12.U		
Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
13 Sodium 1H, 427.00 > 407.00		•		e 1.000	1942018	44.8		94.5	40083	
D 12 M2-6:2FTS 429.00 > 409.00		2.742	0.0		2299045	48.3		102	32646	
* 62 13C2-PFOA 415.00 > 370.00	2.764	2.764	0.0		3940812	50.0		100	30481	
15 Perfluorooct 413.00 > 369.00 413.00 > 169.00	2.771	id 2.771 2.771	0.0	1.000 1.000	4152199 2663426	46.0	1.56(0.90-1.10)	92.0	895 9595	
D 14 13C4 PFO 417.00 > 372.00	А	2.771	0.0	1.000	4230429	51.5	1.30(0.70 1.10)	103	33757	
16 Perfluorohe 449.00 > 80.00	ptanesul	fonic Ac 2.778		1.000	5881872	47.5		99.8	28223	
17 Perfluorooct 499.00 > 80.00 499.00 > 99.00	3.151	onic acio 3.151 3.151		1.000 1.000	5241863 1067312	44.9	4.91(0.90-1.10)	96.8	154236 8224	
20 Perfluoronoi 463.00 > 419.00	nanoic a		0.0	1.000	3191302	49.7	4.71(0.70-1.10)	99.4	5936	
D 18 13C4 PFOS 503.00 > 80.00		3.151	0.0		5276220	48.8		102	16568	
D 19 13C5 PFN/ 468.00 > 423.00		3.151	0.0		3153174	48.0		95.9	15026	
25 Sodium 1H, 527.00 > 507.00	3.497	•		ne 1.000	1439453	43.9		91.6	14524	
D 26 M2-8:2FTS 529.00 > 509.00	3.497	3.497	0.0		1725140	47.3		98.7	14628	
D 21 13C8 FOSA 506.00 > 78.00	3.507	3.507			9009954	49.3		98.6	13244	
22 Perfluorooct 498.00 > 78.00 D 23 13C2 PFDA	3.507	3.507		1.000	8336869	51.3		103	10729	
515.00 > 470.00 24 Perfluorodeo	3.507	3.507	0.0		2677197	47.9		95.9	8371	
513.00 > 469.00 D 27 d3-NMeFO	3.507	3.507	0.0	1.000	2520364	48.0		96.1	8151	
573.00 > 419.00 28 N-methyl pe	3.658	3.658 ctane su			1068222	49.2		98.3	7360	
570.00 > 419.00 29 Perfluorodeo	3.669	3.669	0.0	1.003	944053	48.6		97.1	10289	
599.00 > 80.00 D 32 d5-NEtFOS	3.815	3.815		1.000	3130876	45.6		94.5	9043	
589.00 > 419.00 31 Perfluoround		3.824 acid	0.0		1038989	47.4		94.8	2950	
563.00 > 519.00 33 N-ethyl perfl		3.833 ane sulfo		1.000	1875333	46.6		93.2	3524	
584.00 > 419.00 D 30 13C2 PFUr		3.833	0.0	1.002	878491	49.8		99.6	7916	
565.00 > 520.00	3.833	3.833	0.0		Page 792 of 1	104 48.1		96.1	8387	

Report Date: 24-Jul-2017 13:03:08 Chrom Revision: 2.2 26-Jun-2017 08:09:44

Data File:	\\Chrc	mNa\Sa	acrament	o\Chrom	Data\A8_N\201	70724-4577	6.b\2017.07.23A_0 ⁻	12.d		
Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 34 d-N-MeFOS	SA-M									
515.00 > 169.00		3.993	0.0		2389531	50.7		101	862	
35 MeFOSA										
512.00 > 169.00	3.993	3.993	0.0	1.000	2092950	47.7		95.4	7483	
37 Perfluorodod	ecanoic	acid								
613.00 > 569.00	4.123	4.123	0.0	1.000	1717653	48.4		96.7	1259	
D 36 13C2 PFDo.	Α									
615.00 > 570.00	4.123	4.123	0.0		1911233	42.8		85.6	4783	
D 38 d-N-EtFOSA	N-A									
531.00 > 169.00	4.174	4.174	0.0		2543304	52.1		104	6780	
39 N-ethylperflu	oro-1-o	ctanesu	lfonami							
526.00 > 169.00	4.183	4.183	0.0	1.000	2291760	48.6		97.2	7551	
41 Perfluorotride	ecanoic	acid								
663.00 > 619.00	4.388	4.388	0.0	1.000	1637243	50.3		101	636	
D 43 13C2-PFTel										
715.00 > 670.00	4.619	4.619	0.0		4024675	49.6		99.1	19711	
42 Perfluorotetra										
712.50 > 668.90		4.630	0.0	1.000	3564906	48.5	(05 (0 00 0 00)	97.0	251	
713.00 > 169.00		4.630	-0.012	0.998	520427		6.85(0.00-0.00)		6036	
45 Perfluorohex				4 000	4550404	50 /		101	000	
813.00 > 769.00		5.030	0.0	1.000	1552604	50.6		101	282	
D 44 13C2-PFHx		F 000	0.0		1007/01	47.7		00.0	45.7	
815.00 > 770.00		5.030	0.0		1927621	46.7		93.3	4567	
46 Perfluoroocta			0.0	1 000	15/2420	F2 F		107	/7/	
913.00 > 869.00	ე.კგ I	5.381	0.0	1.000	1563429	53.5		107	676	
QC Flag Lege	end									

OC Flag Legend Processing Flags

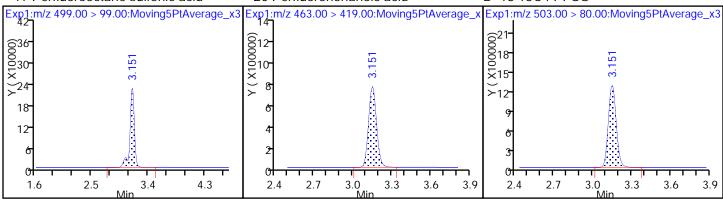
NC - Not Calibrated

Reagents:

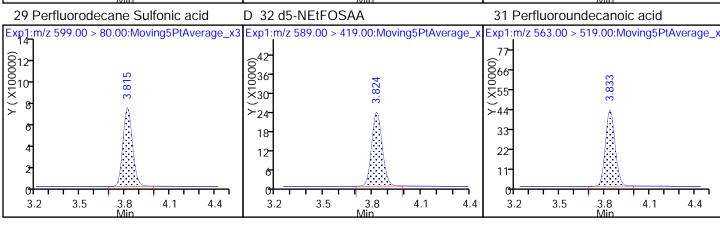
LCPFC_FULL-L5_00008 Amount Added: 1.00 Units: mL

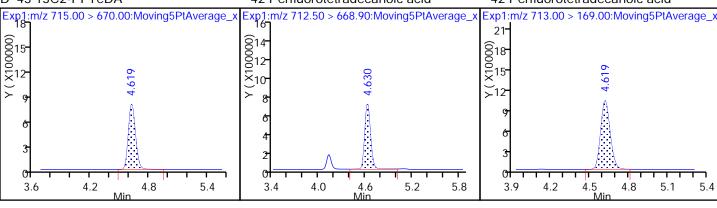
Report Date: 24-Jul-2017 13:03:08 Chrom Revision: 2.2 26-Jun-2017 08:09:44 TestAmerica Sacramento Data File: **Injection Date:** 23-Jul-2017 15:48:51 Instrument ID: A8_N Lims ID: CCV L5 Client ID: Operator ID: SACINSTLCMS01 ALS Bottle#: 32 Worklist Smp#: 12 Injection Vol: 2.0 ul Dil. Factor: 1.0000 Method: Limit Group: LC PFC_DOD ICAL $A8_N$ 2 Perfluorobutyric acid D 113C4 PFBA 4 Perfluoropentanoic acid Exp1:m/z 212.90 > 169.00:Moving5PtAverage_x Exp1:m/z 217.00 > 172.00:Moving5PtAverage_x Exp1:m/z 262.90 > 219.00:Moving5PtAverage_x (42⁻ 00036⁻ ×30 ©28 0024 036 030 ×20 ≻16- 18 18 12 1.3 1.1 1.4 1.7 2.0 0.8 1.1 1.4 2.0 2.3 1.0 1.6 1.9 2.2 2.5 5 Perfluorobutanesulfonic acid 5 Perfluorobutanesulfonic acid D 3 13C5-PFPeA Exp1:m/z 298.90 > 80.00:Moving5PtAverage_x3 Exp1:m/z 298.90 > 99.00:Moving5PtAverage x3 Exp1:m/z 267.90 > 223.00:Moving5PtAverage_x (21° 00018° ×15° ©28 0024 0042 0005 0035 ×20 <u>~</u>28 21 12 2.5 1.3 1.9 2.2 1.4 2.0 2.3 2.0 1.0 1.6 1.1 1.1 1.4 1.7 2.3 61 Sodium 1H,1H,2H,2H-perfluorohexan 6 Perfluorohexanoic acid 7 13C2 PFHxA Exp1:m/z 315.00 > 270.00:Moving5PtAverage_x 21 24 (12¹ (0000010) (12¹ (000018-15-12-(0020 20 ×16 01 2.0 3.2 2.2 2.8 1.5 1.8 2.1 8.0 1.4 2.6 1.0 1.6 2.4 2.7 8 Perfluorohexanesulfonic acid 10 Perfluoroheptanoic acid 9 13C4-PFHpA Exp1:m/z 363.00 > 319.00:Moving5PtAverage_x Exp1:m/z 399.00 > 80.00:Moving5PtAverage_x3 Exp1:m/z 367.00 > 322.00:Moving5PtAverage_x (0000 0000 (0000) (0000 (0000) (018-100015-0 0| 1.9 2.2 2.5 2.8 3.1 1.7 2.9 1.8 2.1 2.4 2.7 3.0 3.3 2.0 Page 794 rof 1104 1.5 1.6

Report Date: 24-Jul-2017 13:03:08 Chrom Revision: 2.2 26-Jun-2017 08:09:44 Data File: \ChromNa\Sacramento\ChromData\A8_N\20170724-45776.b\2017.07.23A_012.d D 11 1802 PFHxS 13 Sodium 1H,1H,2H,2H-perfluoroocta De 12 M2-6:2FTS Exp1:m/z 403.00 > 84.00:Moving5PtAverage_x3 Y (X100000) 628 0024 672 672 ∑20 ∑60 ≻48 36 12 24 12 2.3 2.9 2.7 1.7 2.0 2.6 2.0 2.3 2.6 2.9 3.2 3.5 2.1 2.4 3.0 3.3 62 13C2-PFOA 15 Perfluorooctanoic acid 15 Perfluorooctanoic acid Exp1:m/z 413.00 > 169.00:Moving5PtAverage_> Exp1:m/z 413.00 > 369.00:Moving5PtAverage_x Exp1:m/z 415.00 > 370.00:Moving5PtAverage_> (000015 X) (X100000) X (X1000000) (0000012⁻ × 9 2.8 2.3 2.9 3.2 2.5 2.3 2.6 3.1 2.6 D 14 13C4 PFOA 16 Perfluoroheptanesulfonic Acid 17 Perfluorooctane sulfonic acid Exp1:m/z 417.00 > 372.00:Moving5PtAverage_x Exp1:m/z 449.00 > 80.00:Moving5PtAverage_x3 Exp1:m/z 499.00 > 80.00:Moving5PtAverage_x3 (000015 X12 624 0020 020 000012 ×) <u>`</u>16 2.3 2.6 2.9 3.2 3.5 2.0 2.3 2.6 2.9 3.2 3.5 2.0 0.5 3.5 Min 17 Perfluorooctane sulfonic acid 20 Perfluorononanoic acid D 18 13C4 PFOS Exp1:m/z 463.00 > 419.00:Moving5PtAverage_x Exp1:m/z 503.00 > 80.00:Moving5PtAverage_x Exp1:m/z 499.00 > 99.00:Moving5PtAverage_x3

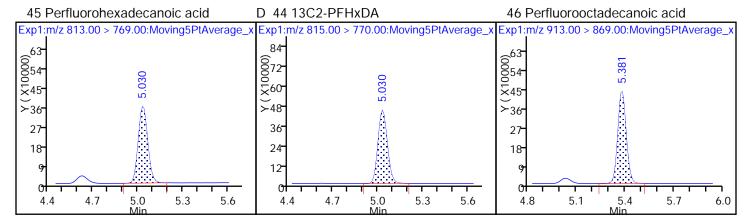


Report Date: 24-Jul-2017 13:03:08 Chrom Revision: 2.2 26-Jun-2017 08:09:44 Data File: \ChromNa\Sacramento\ChromData\A8_N\20170724-45776.b\2017.07.23A_012.d D 19 13C5 PFNA 25 Sodium 1H,1H,2H,2H-perfluorodecabe26 M2-8:2FTS Exp1:m/z 527.00 > 507.00:Moving5PtAverage_x | Exp1:m/z 529.00 > 509.00:Moving5PtAverage_x Exp1:m/z 468.00 > 423.00:Moving5PtAverage_x (12 X) X) X (100000) X) X (12 X) 0048 00040 × × 32 (054 0054 ×45 **≻**36 24 27 16 18 2.4 2.7 3.0 3.3 3.6 3.9 2.8 3.1 3.4 3.7 4.0 2.8 3.1 3.4 3.7 4.0 D 21 13C8 FOSA 22 Perfluorooctane Sulfonamide D 23 13C2 PFDA Exp1:m/z 506.00 > 78.00:Moving5PtAverage_x3 (35⁻ (0030 (30⁻ (25⁻ Y (X100000) 635- ×25 ∑20⁻ ≻20 15 15 10 10 3.5 2.9 3.2 2.9 3.5 3.0 3.6 3.8 4.1 3.3 3.9 24 Perfluorodecanoic acid D 27 d3-NMeFOSAA 28 N-methyl perfluorooctane sulfonami Exp1:m/z 513.00 > 469.00:Moving5PtAverage_> Exp1:m/z 573.00 > 419.00:Moving5PtAverage_> Exp1:m/z 570.00 > 419.00:Moving5PtAverage_x 42 91 0030 0030 036 0078 ×65 X30->24 **≻**52 18 39 18 12 26 12 13 0 0 3.4 3.7 4.0 2.9 3.2 3.5 3.8 3.2 3.5 3.8 3.1 4.1 4.4 2.9 2.8 4.1 4.4 29 Perfluorodecane Sulfonic acid D 32 d5-NEtFOSAA 31 Perfluoroundecanoic acid Exp1:m/z 563.00 > 519.00:Moving5PtAverage_x 77





Report Date: 24-Jul-2017 13:03:09 Chrom Revision: 2.2 26-Jun-2017 08:09:44



FORM VII LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-29732-1

SDG No.:

Lab Sample ID: CCV 320-175528/21 Calibration Date: 07/23/2017 16:50

Instrument ID: A8_N Calib Start Date: 07/23/2017 13:10

GC Column: GeminiC18 3×100 ID: 3.00 (mm) Calib End Date: 07/23/2017 13:58

Lab File ID: 2017.07.23A_021.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanoic acid (PFBA)	AveID	0.8820	0.9379		21.3	20.0	6.3	25.0
Perfluoropentanoic acid (PFPeA)	AveID	1.042	1.031		19.8	20.0	-1.1	25.0
Perfluorobutanesulfonic acid (PFBS)	AveID	1.489	1.503		17.8	17.7	0.9	25.0
Perfluorohexanoic acid (PFHxA)	AveID	0.9521	0.9232		19.4	20.0	-3.0	25.0
Perfluoroheptanoic acid (PFHpA)	AveID	1.026	0.9873		19.2	20.0	-3.8	25.0
Perfluorohexanesulfonic acid (PFHxS)	AveID	1.082	1.013		17.0	18.2	-6.4	25.0
6:2FTS	AveID	0.8958	0.8597		18.2	19.0	-4.0	25.0
Perfluorooctanoic acid (PFOA)	AveID	1.067	1.043		19.6	20.0	-2.2	25.0
Perfluoroheptanesulfonic Acid (PFHpS)	AveID	1.122	1.243		21.1	19.0	10.8	25.0
Perfluorononanoic acid (PFNA)	AveID	1.018	1.020		20.0	20.0	0.2	25.0
Perfluorooctanesulfonic acid (PFOS)	AveID	1.057	1.048		18.4	18.6	-0.9	25.0
8:2FTS	AveID	0.9107	0.9236		19.4	19.2	1.4	25.0
Perfluorodecanoic acid (PFDA)	AveID	0.9799	0.9608		19.6	20.0	-2.0	25.0
Perfluorooctane Sulfonamide (FOSA)	AveID	0.9018	0.9238		20.5	20.0	2.4	25.0
N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA)	AveID	0.9100	0.9171		20.2	20.0	0.8	25.0
Perfluorodecanesulfonic acid (PFDS)	AveID	0.6225	0.6369		19.7	19.3	2.3	25.0
N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)	AveID	0.8488	0.8432		19.9	20.0	-0.7	25.0
Perfluoroundecanoic acid (PFUnA)	L2ID		1.050		20.4	20.0	1.9	25.0
MeFOSA	AveID	0.9183	0.8819		19.2	20.0	-4.0	25.0
Perfluorododecanoic acid (PFDoA)	AveID	0.9292	0.8799		18.9	20.0	-5.3	25.0
N-EtFOSA-M	AveID	0.9274	0.8905		19.2	20.0	-4.0	25.0
Perfluorotridecanoic Acid (PFTriA)	AveID	0.8514	0.9621		22.6	20.0	13.0	25.0
Perfluorotetradecanoic acid (PFTeA)	AveID	1.922	2.128		22.1	20.0	10.7	25.0
Perfluoro-n-hexadecanoic acid (PFHxDA)	L2ID		0.8696		21.3	20.0	6.5	25.0
Perfluoro-n-octadecanoic acid (PFODA)	AveID	0.7652	0.8649		22.6	20.0	13.0	25.0
13C4 PFBA	Ave	156025	173888		55.7	50.0	11.4	50.0
13C5 PFPeA	Ave	110496	117948		53.4	50.0	6.7	50.0
13C2 PFHxA	Ave	101156	103863		51.3	50.0	2.7	50.0
13C4-PFHpA	Ave	83824	89637		53.5	50.0	6.9	50.0
1802 PFHxS	Ave	137438	145465		50.1	47.3	5.8	50.0
M2-6:2FTS	Ave	47560	49323		49.3	47.5	3.7	50.0

FORM VII LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-29732-1

SDG No.:

Lab Sample ID: CCV 320-175528/21 Calibration Date: 07/23/2017 16:50

Instrument ID: <u>A8_N</u> Calib Start Date: 07/23/2017 13:10

GC Column: GeminiC18 3×100 ID: 3.00 (mm) Calib End Date: 07/23/2017 13:58

Lab File ID: 2017.07.23A_021.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE CF	CF	MIN CF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
13C4 PFOA	Ave	82143	84145		51.2	50.0	2.4	50.0
13C4 PFOS	Ave	108200	104664		46.2	47.8	-3.3	50.0
13C5 PFNA	Ave	65740	62537		47.6	50.0	-4.9	50.0
M2-8:2FTS	Ave	36500	34924		45.8	47.9	-4.3	50.0
13C2 PFDA	Ave	55836	54622		48.9	50.0	-2.2	50.0
13C8 FOSA	Ave	182802	181189		49.6	50.0	-0.9	50.0
d3-NMeFOSAA	Ave	21732	20224		46.5	50.0	-6.9	50.0
d5-NEtFOSAA	Ave	21931	21268		48.5	50.0	-3.0	50.0
13C2 PFUnA	Ave	40729	36927		45.3	50.0	-9.3	50.0
d-N-MeFOSA-M	Ave	47115	46769		49.6	50.0	-0.7	50.0
13C2 PFDoA	Ave	44655	37023		41.5	50.0	-17.1	50.0
d-N-EtFOSA-M	Ave	48834	48239		49.4	50.0	-1.2	50.0
13C2-PFTeDA	Ave	81216	71157		43.8	50.0	-12.4	50.0
13C2-PFH×DA	Ave	41307	35798		43.3	50.0	-13.3	50.0

Report Date: 24-Jul-2017 12:07:06 Chrom Revision: 2.2 26-Jun-2017 08:09:44

> TestAmerica Sacramento **Target Compound Quantitation Report**

\\ChromNa\Sacramento\ChromData\A8_N\20170724-45776.b\2017.07.23A_021.d Data File:

Lims ID: CCV L4

Client ID:

Sample Type: CCV

Inject. Date: 23-Jul-2017 16:50:57 ALS Bottle#: 31 Worklist Smp#: 21

Injection Vol: Dil. Factor: 1.0000 2.0 ul

Sample Info: CCV L4

Misc. Info.: Plate: 1 Rack: 1

Operator ID: SACINSTLCMS01 Instrument ID: A8_N

Sublist: chrom-A8_N*sub18

Method:

Limit Group: LC PFC_DOD ICAL

Last Update: 24-Jul-2017 12:07:06 Calib Date: 23-Jul-2017 13:58:26

Integrator: Picker

Quant Method: Isotopic Dilution Quant By: **Initial Calibration**

Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20170723-45765.b\2017.07.23ICAL_010.d

Det: EXP1 Column 1:

Process Host:	XAWI	RK004								
Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
2 Perfluorobuty	yric acid									
212.90 > 169.00	1.556	1.556	0.0	1.000	3261642	21.3		106	1397	
D 113C4 PFBA		4 == /			0.404404				10001	
217.00 > 172.00		1.556	0.0		8694401	55.7		111	40024	
4 Perfluoropen 262.90 > 219.00			-0.009	1.000	2432151	19.8		98.9	1512	
D 3 13C5-PFPe		1.775	0.007	1.000	2432131	17.0		70.7	1012	
267.90 > 223.00		1.775	-0.009		5897420	53.4		107	67163	
D 47 13C3-PFB	S									
301.90 > 83.00	1.793	1.793	0.0		135943	NC			6394	
5 Perfluorobuta										
	1.793	1.802	-0.009	1.000	3864490	17.8	2 57/0 00 0 00)	101	2416	
298.90 > 99.00		1.802	-0.009	1.000	1500909		2.57(0.00-0.00)		2163	
61 Sodium 1H, 327.00 > 307.00				1.000	863323	18.0		96.5	43460	
6 Perfluorohex			0.011	1.000	000020	10.0		70.0	10 100	
313.00 > 269.00			-0.012	1.000	1917750	19.4		97.0	4979	
D 7 13C2 PFHx	:A									
315.00 > 270.00	2.043	2.055	-0.012		5193149	51.3		103	39719	
10 Perfluorohe										
363.00 > 319.00		2.403	-0.011	1.000	1769999	19.2		96.2	6051	
D 9 13C4-PFHp		2.402	0.011		4404070	F2 F		107	21/20	
367.00 > 322.00		2.403			4481872	53.5		107	31630	
8 Perfluorohex 399.00 > 80.00			-0.011	1.000	2681184	17.0		93.6	2224	
D 11 1802 PFH		2.717	0.011	1.000	2001104	17.0		73.0	2227	
403.00 > 84.00		2.419	-0.011		6880509	50.1		106	36516	
13 Sodium 1H,	1H,2H,2	H-perflu	orooctan	е						
427.00 > 407.00				1.000	803920 Page 801 of 1	18.2		96.0	19454	
					Page 801 of 1	104				

Report Date: 24-Jul-2017 12:07:06 Chrom Revision: 2.2 26-Jun-2017 08:09:44

Report Date: 24- Data File:				o\Chrom			26-Jun-2017 08:09 6.b\2017.07.23A_0			
Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 12 M2-6:2FTS	:					3	, ,		ļ	
429.00 > 409.00	2.726	2.742	-0.016		2342838	49.3		104	31347	
* 62 13C2-PFOA 415.00 > 370.00	2.755	2.764	-0.009		4125547	50.0		100	29726	
15 Perfluorooc			0.014	1 000	1754949	19.6		07.0	271	
413.00 > 369.00 413.00 > 169.00	2.755	2.771 2.771	-0.016 -0.016	1.000 1.000	1131978	19.0	1.55(0.90-1.10)	97.8	371 6659	
D 14 13C4 PFO 417.00 > 372.00		2.771	-0.016		4207257	51.2		102	25340	
16 Perfluorohe 449.00 > 80.00	•			1.000	2477495	21.1		111	25965	
17 Perfluorooc										
499.00 > 80.00			-0.011	1.000	2035437	18.4		99.1	50727	
499.00 > 99.00	3.140	3.151	-0.011	1.000	430392		4.73(0.90-1.10)		3680	
20 Perfluorono 463.00 > 419.00		cid 3.151	-0.011	1.000	1275362	20.0		100	4034	
D 18 13C4 PFO 503.00 > 80.00		3.151	-0.011		5002944	46.2		96.7	16049	
D 19 13C5 PFN 468.00 > 423.00		3.151	-0 011		3126860	47.6		95.1	14023	
25 Sodium 1H,				10	3120000	47.0		75.1	14023	
527.00 > 507.00	3.491	•	-0.006	1.000	618053	19.4		101	12619	
D 26 M2-8:2FTS 529.00 > 509.00		3.497	-0.006		1672869	45.8		95.7	15038	
D 21 13C8 FOS 506.00 > 78.00		3.507	-0.007		9059472	49.6		99.1	10802	
22 Perfluorooc	tane Sulf	fonamide	Э							
498.00 > 78.00 D 23 13C2 PFD		3.507	-0.007	1.000	3347511	20.5		102	11612	
515.00 > 470.00	3.500	3.507	-0.007		2731086	48.9		97.8	7759	
24 Perfluorode 513.00 > 469.00			-0.007	1 000	1049593	19.6		98.0	4072	
D 27 d3-NMeFC	SAA			1.000						
573.00 > 419.00 28 N-methyl pe			-0.004		1011201	46.5		93.1	7892	
570.00 > 419.00				1.000	370934	20.2		101	7041	
29 Perfluorode 599.00 > 80.00			id -0.006	1.000	1285162	19.7		102	10712	
D 32 d5-NEtFOS 589.00 > 419.00		3.824	-0.006		1063396	48.5		97.0	3062	
31 Perfluoroun			0.000		1000070	10.0		77.0	0002	
563.00 > 519.00	3.827	3.833		1.000	775811	20.4		102	2120	
33 N-ethyl perf 584.00 > 419.00				1.002	358640	19.9		99.3	5202	
D 30 13C2 PFU 565.00 > 520.00		3.833	-0.006		1846344	45.3		90.7	10691	
D 34 d-N-MeFO		2 002	0.001		2220445	40.4		00.2	012	
515.00 > 169.00	3.992	3.993	-0.001		Page 802 of 1	104 ^{49.0}		99.3	843	

Report Date: 24-Jul-2017 12:07:06
Data File: \\Chrom\\a\Sacra Chrom Revision: 2.2 26-Jun-2017 08:09:44

Data File:	\\Chro	mNa\Sa	acrament	o\Chrom	Data\A8_N\201	70724-4577	6.b\2017.07.23A_02	21.d		
Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
35 MeFOSA										
512.00 > 169.00	3.992	3.993	-0.001	1.000	824938	19.2		96.0	5049	
37 Perfluorodod	ecanoic	acid								
613.00 > 569.00	4.122	4.123	-0.001	1.000	651562	18.9		94.7	560	
D 36 13C2 PFDo	A									
615.00 > 570.00	4.122	4.123	-0.001		1851150	41.5		82.9	4611	
D 38 d-N-EtFOSA										
531.00 > 169.00	4.172	4.174	-0.002		2411928	49.4		98.8	6368	
39 N-ethylperfluo										
526.00 > 169.00	4.181	4.183	-0.002	1.000	859108	19.2		96.0	5105	
41 Perfluorotride										
663.00 > 619.00		4.388	-0.007	1.000	712381	22.6		113	222	
D 43 13C2-PFTel		4 (40	0.000		0557007	40.0		07.	45007	
715.00 > 670.00		4.619	-0.002		3557836	43.8		87.6	15926	
42 Perfluorotetra			0.014	1 000	1575000	22.1		111	117	
712.50 > 668.90 · 713.00 > 169.00 ·		4.630 4.630	-0.014 -0.014	1.000 1.000	1575992 202412	22.1	7.79(0.00-0.00)	111	117 2717	
			-0.014	1.000	202412		7.79(0.00-0.00)		2/1/	
45 Perfluorohexa 813.00 > 769.00			-0.005	1.000	643909	21.3		107	125	
D 44 13C2-PFHxl		3.030	-0.003	1.000	043707	21.5		107	123	
815.00 > 770.00		5.030	-0.005		1789908	43.3		86.7	4632	
46 Perfluoroocta			0.000		1707700	10.0		00.7	1002	
913.00 > 869.00		5.381	-0.013	1.000	640391	22.6		113	292	
			3.0.3		3.337.					
QC Flag Lege	end									

Processing Flags

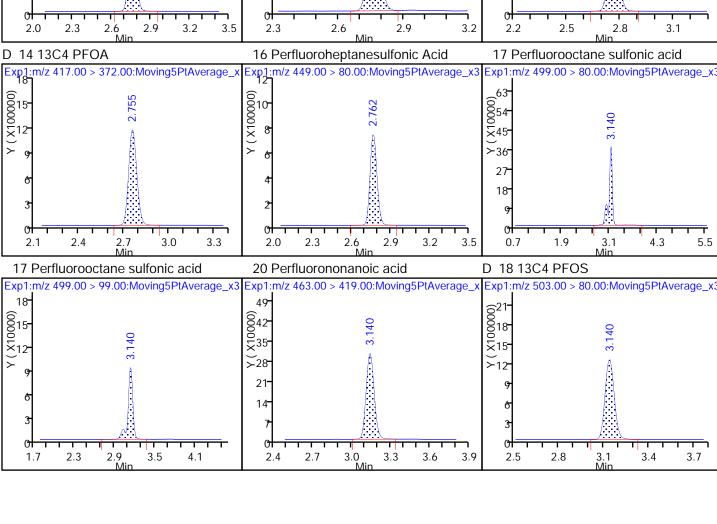
NC - Not Calibrated

Reagents:

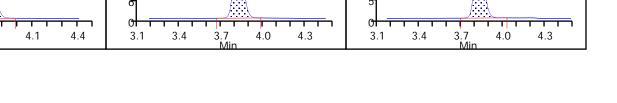
LCPFC_FULL-L4_00008 Amount Added: 1.00 Units: mL

Report Date: 24-Jul-2017 12:07:06 Chrom Revision: 2.2 26-Jun-2017 08:09:44 TestAmerica Sacramento Data File: \ChromNa\Sacramento\ChromData\A8_N\20170724-45776.b\2017.07.23A_021.d **Injection Date:** 23-Jul-2017 16:50:57 Instrument ID: A8_N Lims ID: CCV L4 Client ID: Operator ID: SACINSTLCMS01 ALS Bottle#: 31 Worklist Smp#: 21 Injection Vol: 2.0 ul Dil. Factor: 1.0000 Method: Limit Group: LC PFC_DOD ICAL $A8_N$ 2 Perfluorobutyric acid D 113C4 PFBA 4 Perfluoropentanoic acid Exp1:m/z 212.90 > 169.00:Moving5PtAverage_x Exp1:m/z 217.00 > 172.00:Moving5PtAverage_x Exp1:m/z 262.90 > 219.00:Moving5PtAverage_x (X100000) (X100000) (X100000) 6000015- 042 0036 X. \approx 30 18 12 1.2 1.5 1.8 2.1 1.1 1.4 2.0 1.1 1.4 2.0 2.3 5 Perfluorobutanesulfonic acid 5 Perfluorobutanesulfonic acid D 3 13C5-PFPeA Exp1:m/z 267.90 > 223.00:Moving5PtAverage_x Exp1:m/z 298.90 > 80.00:Moving5PtAverage x3 Exp1:m/z 298.90 > 99.00:Moving5PtAverage_x3 70 (6)18-(6)00015-(7)12-(7)18-©28 0024 060-×50-×20 -40 12 20 10 2.4 1.5 1.8 2.1 1.4 2.0 2.3 1.7 2.0 1.2 1.1 1.4 2.3 1.1 61 Sodium 1H,1H,2H,2H-perfluorohexan@ Perfluorohexanoic acid 7 13C2 PFHxA Exp1:m/z 315.00 > 270.00:Moving5PtAverage_x 24 (0020-0020-×16-©36 036 (0072 ×60 ≻48- 18 36 12 24 12 0.9 1.5 2.1 2.7 1.9 2.2 2.5 2.8 1.5 1.8 2.1 1.6 1.2 2.4 2.7 1.3 10 Perfluoroheptanoic acid 8 Perfluorohexanesulfonic acid 9 13C4-PFHpA Exp1:m/z 363.00 > 319.00:Moving5PtAverage_x Exp1:m/z 367.00 > 322.00:Moving5PtAverage_x Exp1:m/z 399.00 > 80.00:Moving5PtAverage_x3 (X100000) (018-100015-()77 ()66 ×55 33 22 11 $^{\circ}$ 0|- 01.9 2.2 2.5 2.8 3.1 1.7 2.9 1.9 2.2 2.5 2.8 3.1 1.6 1.6

Report Date: 24-Jul-2017 12:07:06 Chrom Revision: 2.2 26-Jun-2017 08:09:44 Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170724-45776.b\2017.07.23A_021.d D 11 1802 PFHxS 13 Sodium 1H,1H,2H,2H-perfluoroocta De 12 M2-6:2FTS Exp1:m/z 403.00 > 84.00:Moving5PtAverage_x3 Y (X100000) (000001 ×) 20 630 625 ×20. 15 15 10 10 2.7 2.9 2.0 2.3 2.6 2.9 3.2 2.1 2.4 3.0 3.3 2.0 2.3 2.6 3.2 1.7 62 13C2-PFOA 15 Perfluorooctanoic acid 15 Perfluorooctanoic acid Exp1:m/z 415.00 > 370.00:Moving5PtAverage_x Exp1:m/z 413.00 > 169.00:Moving5PtAverage_> Exp1:m/z 413.00 > 369.00:Moving5PtAverage_x 70 (0000015⁻ 12⁻ 29 (042 0001 X 660 550 **≻**40 21 30 20 10 2.3 2.9 3.2 2.9 2.5 2.8 2.6 2.6 3.1 16 Perfluoroheptanesulfonic Acid 17 Perfluorooctane sulfonic acid Exp1:m/z 449.00 > 80.00:Moving5PtAverage_x3 Exp1:m/z 499.00 > 80.00:Moving5PtAverage_x3 63 (X100000) (0054 ×45 27 18 0 0 1.9 2.4 2.7 3.0 3.3 2.3 2.6 2.9 3.2 3.5 3.1 4.3 5.5 2.0 0.7 2.1 17 Perfluorooctane sulfonic acid 20 Perfluorononanoic acid D 18 13C4 PFOS 18 49



Report Date: 24-Jul-2017 12:07:06 Chrom Revision: 2.2 26-Jun-2017 08:09:44 Data File: \ChromNa\Sacramento\ChromData\A8_N\20170724-45776.b\2017.07.23A_021.d D 19 13C5 PFNA 25 Sodium 1H,1H,2H,2H-perfluorodecabe26 M2-8:2FTS Exp1:m/z 527.00 > 507.00:Moving5PtAverage_x | Exp1:m/z 529.00 > 509.00:Moving5PtAverage_x Exp1:m/z 468.00 > 423.00:Moving5PtAverage_x (12 X) X) X (100000) X) X (12 X) 63 621- 6218-0054 ×45 ×15 $> 36^{\circ}$ 27 18 0 2.4 2.7 3.0 3.3 3.6 3.9 2.8 3.1 3.4 3.7 4.0 2.8 3.1 3.4 3.7 4.0 D 21 13C8 FOSA 22 Perfluorooctane Sulfonamide D 23 13C2 PFDA Exp1:m/z 515.00 > 470.00:Moving5PtAverage_> Exp1:m/z 498.00 > 78.00:Moving5PtAverage_x3 Exp1:m/z 506.00 > 78.00:Moving5PtAverage_x3 (35 0030 ×25 (X100000) 8 6 (X100000) (X100000) (X100000) 15 10 0 3.4 3.0 3.9 3.1 4.0 3.3 3.6 3.1 3.7 4.0 24 Perfluorodecanoic acid D 27 d3-NMeFOSAA 28 N-methyl perfluorooctane sulfonami Exp1:m/z 573.00 > 419.00:Moving5PtAverage_> Exp1:m/z 513.00 > 469.00:Moving5PtAverage_> Exp1:m/z 570.00 > 419.00:Moving5PtAverage_x 42 (000012 X 030- X 30 36 18 18 12 0 3.4 4.0 2.9 3.2 3.5 3.8 3.3 3.6 3.9 4.2 2.8 3.1 3.7 4.1 4.4 3.0 29 Perfluorodecane Sulfonic acid D 32 d5-NEtFOSAA 31 Perfluoroundecanoic acid Exp1:m/z 599.00 > 80.00:Moving5PtAverage_x3 Exp1:m/z 589.00 > 419.00:Moving5PtAverage_x Exp1:m/z 563.00 > 519.00:Moving5PtAverage_> 42 649 0042 (30° 00025 ×)20° ©36-30- Σ_{35} ≻₂₈-15



10

18

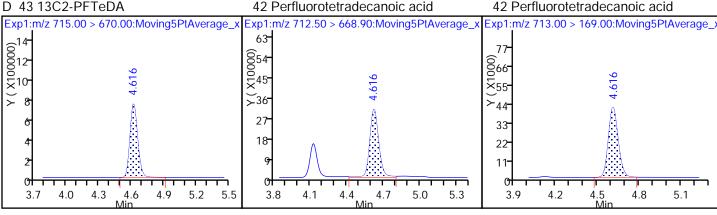
12

21

0 3.2

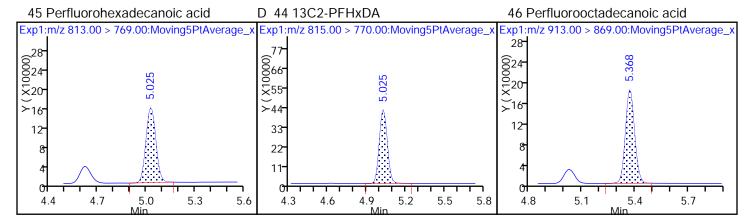
3.5

3.8



Report Date: 24-Jul-2017 12:07:07 Chrom Revision: 2.2 26-Jun-2017 08:09:44

Data File: \ChromNa\Sacramento\ChromData\A8_N\20170724-45776.b\2017.07.23A_021.d



FORM VII LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-29732-1

SDG No.:

Lab Sample ID: <u>CCVL 320-175631/2</u> Calibration Date: <u>07/24/2017 11:42</u>

Instrument ID: A8_N Calib Start Date: 07/23/2017 13:10

GC Column: GeminiC18 3×100 ID: 3.00 (mm) Calib End Date: 07/23/2017 13:58

Lab File ID: 2017.07.24A_004.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanoic acid (PFBA)	AveID	0.8820	0.9430		1.07	1.00	6.9	50.0
Perfluoropentanoic acid (PFPeA)	AveID	1.042	1.068		1.02	1.00	2.5	50.0
Perfluorobutanesulfonic acid (PFBS)	AveID	1.489	1.485		0.881	0.884	-0.3	50.0
Perfluorohexanoic acid (PFHxA)	AveID	0.9521	0.9823		1.03	1.00	3.2	50.0
Perfluoroheptanoic acid (PFHpA)	AveID	1.026	1.035		1.01	1.00	0.8	50.0
Perfluorohexanesulfonic acid (PFHxS)	AveID	1.082	1.177		0.990	0.910	8.8	50.0
6:2FTS	AveID	0.8958	1.066		1.13	0.948	19.0	50.0
Perfluorooctanoic acid (PFOA)	AveID	1.067	1.050		0.985	1.00	-1.5	50.0
Perfluoroheptanesulfonic Acid (PFHpS)	AveID	1.122	1.167		0.991	0.952	4.1	50.0
Perfluorononanoic acid (PFNA)	AveID	1.018	0.9560		0.939	1.00	-6.1	50.0
Perfluorooctanesulfonic acid (PFOS)	AveID	1.057	1.478		1.30	0.928	39.8	50.0
Perfluorooctane Sulfonamide (FOSA)	AveID	0.9018	0.9118		1.01	1.00	1.1	50.0
8:2FTS	AveID	0.9107	0.9012		0.948	0.958	-1.0	50.0
Perfluorodecanoic acid (PFDA)	AveID	0.9799	0.9261		0.945	1.00	-5.5	50.0
N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA)	AveID	0.9100	0.8950		0.984	1.00	-1.6	50.0
Perfluorodecanesulfonic acid (PFDS)	AveID	0.6225	0.6623		1.03	0.964	6.4	50.0
N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)	AveID	0.8488	0.7597		0.895	1.00	-10.5	50.0
Perfluoroundecanoic acid (PFUnA)	L2ID		1.159		1.02	1.00	2.4	50.0
MeFOSA	AveID	0.9183	0.9275		1.01	1.00	1.0	50.0
N-EtFOSA-M	AveID	0.9274	0.9449		1.02	1.00	1.9	50.0
Perfluorododecanoic acid (PFDoA)	AveID	0.9292	0.9052		0.974	1.00	-2.6	50.0
Perfluorotridecanoic Acid (PFTriA)	AveID	0.8514	0.9070		1.07	1.00	6.5	50.0
Perfluorotetradecanoic acid (PFTeA)	AveID	1.922	2.397		1.25	1.00	24.7	50.0
Perfluoro-n-hexadecanoic acid (PFHxDA)	L2ID		1.714		1.50	1.00	49.9	50.0
Perfluoro-n-octadecanoic acid (PFODA)	AveID	0.7652	0.8116		1.06	1.00	6.1	50.0
13C4 PFBA	Ave	156025	162534		52.1	50.0	4.2	50.0
13C5 PFPeA	Ave	110496	121488		55.0	50.0	9.9	50.0
13C2 PFHxA	Ave	101156	126892		62.7	50.0	25.4	50.0
13C4-PFHpA	Ave	83824	105586		63.0	50.0	26.0	50.0
1802 PFHxS	Ave	137438	151531		52.2	47.3	10.3	50.0
M2-6:2FTS	Ave	47560	55947		55.9	47.5	17.6	50.0

FORM VII LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-29732-1

SDG No.:

Lab Sample ID: <u>CCVL 320-175631/2</u> Calibration Date: <u>07/24/2017 11:42</u>

Instrument ID: A8_N Calib Start Date: 07/23/2017 13:10

GC Column: GeminiC18 3×100 ID: 3.00 (mm) Calib End Date: 07/23/2017 13:58

Lab File ID: 2017.07.24A_004.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE CF	CF	MIN CF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
13C4 PFOA	Ave	82143	102277		62.3	50.0	24.5	50.0
13C4 PFOS	Ave	108200	114047		50.4	47.8	5.4	50.0
13C5 PFNA	Ave	65740	81651		62.1	50.0	24.2	50.0
13C8 FOSA	Ave	182802	190075		52.0	50.0	4.0	50.0
M2-8:2FTS	Ave	36500	50747		66.6	47.9	39.0	50.0
13C2 PFDA	Ave	55836	79839		71.5	50.0	43.0	50.0
d3-NMeFOSAA	Ave	21732	26929		62.0	50.0	23.9	50.0
d5-NEtFOSAA	Ave	21931	28325		64.6	50.0	29.2	50.0
13C2 PFUnA	Ave	40729	59002		72.4	50.0	44.9	50.0
d-N-MeFOSA-M	Ave	47115	47583		50.5	50.0	1.0	50.0
d-N-EtFOSA-M	Ave	48834	47900		49.0	50.0	-1.9	50.0
13C2 PFDoA	Ave	44655	55751		62.4	50.0	24.8	50.0
13C2-PFTeDA	Ave	81216	108030		66.5	50.0	33.0	50.0
13C2-PFHxDA	Ave	41307	56461		68.3	50.0	36.7	50.0

Report Date: 24-Jul-2017 13:24:27 Chrom Revision: 2.2 26-Jun-2017 08:09:44

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170724-45798.b\2017.07.24A_004.d

Lims ID: CCVL

Client ID:

Sample Type: CCVL

Inject. Date: 24-Jul-2017 11:42:12 ALS Bottle#: 29 Worklist Smp#: 2

Injection Vol: 2.0 ul Dil. Factor: 1.0000

Sample Info: CCVL

Misc. Info.: Plate: 1 Rack: 1

Operator ID: SACINSTLCMS01 Instrument ID: A8_N

Sublist: chrom-A8_N*sub18

Method: \ChromNa\Sacramento\ChromData\A8_N\20170724-45798.b\A8_N.m

Limit Group: LC PFC_DOD ICAL

Last Update: 24-Jul-2017 13:24:26 Calib Date: 23-Jul-2017 13:58:26

Integrator: Picker

Quant Method: Isotopic Dilution Quant By: Initial Calibration

Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20170723-45765.b\2017.07.23ICAL_010.d

Column 1 : Det: EXP1

Process Host: XAWRK004

First Level Reviewer: chandrasenas Date: 24-Jul-2017 13:22:06

D 1 13C4 PFBA 217.00 > 172.00 1.553	First Level Revie	wei. Ciia	iliulasei	ias		Date.		4-Jul-2017 13.22.00)		
17.00 > 172.00 1.553 1.556 0.003 0.003 1.006 153263 1.07 107 85.1	Signal	RT		1		Response		Ratio(Limits)	%Rec	S/N	Flags
2 Perfluorobutyric acid 212.90 > 169.00 1.553 1.556 0.003 1.000 153263 1.07 107 85.1 D 3 13C5-PFPeA 267.90 > 223.00 1.772 1.765 0.007	D 113C4 PFBA	١									
212.90 > 169.00 1.553	217.00 > 172.00	1.553	1.556	-0.003		8126694	52.1		104	37818	
D 3 13C5-PFPe→ 267.90 > 223.00 1.772		•		0.000	4 000	450070	4.07		407	05.4	
267.90 > 223.00			1.556	-0.003	1.000	153263	1.07		107	85.1	
4 Perfluoropentanoic acide 262.90 > 219.00 1.772			1.765	0.007		6074378	55.0		110	75659	
262.90 > 219.00											
301.90 > 83.00 1.791 1.793 -0.002 150497 NC 5898 5 Perfluorobutresulforic acid 298.90 > 80.00 1.800 1.793 0.007 1.000 198854 0.8813 99.7 136 298.90 > 99.00 1.791 1.793 -0.002 0.995 83393 2.38(0.00-0.00) 195 61 Sodium 1H,1H,2H,2H-perfluorohexamore 327.00 > 307.00 2.017 2.009 0.008 1.000 49393 0.9089 97.3 1983 D 7 13C2 PFHxA 315.00 > 270.00 2.051 2.043 0.008 1.000 49393 0.9089 97.3 1983 6 Perfluorohexamoric acid 313.00 > 269.00 2.051 2.043 0.008 1.000 124644 1.03 103 512 D 9 13C4-PFHpA 367.00 > 322.00 2.395 2.385 0.010 5279316 63.0 126 28917 10 Perfluoroheptanoic acid 363.00 > 319.00 2.395 2.385 0.010 1.000 109240 1.01 101 524 B Perfluorohexanosulforic acid 32411 2.401 0.010 <t< td=""><td>•</td><td></td><td></td><td>0.007</td><td>1.000</td><td>129748</td><td>1.02</td><td></td><td>102</td><td>87.3</td><td></td></t<>	•			0.007	1.000	129748	1.02		102	87.3	
5 Perfluorobutanesulforic acid 298.90 > 80.00 1.800 1.793 0.007 1.000 198854 2.38(0.00-0.00) 1.791 1.793 0.002 0.995 83393 2.38(0.00-0.00) 195 99.7 136 195 61 Sodium 1H,1H,2H,2H-perfluorohexanoric 327.00 > 307.00 2.017 2.009 0.008 1.000 49393 0.9089 97.3 1983 99.7 1362 195 D 7 13C2 PFHxA 315.00 > 270.00 2.051 2.043 0.008 1.000 124644 1.03 1.03 1.03 1.03 1.03 1.03 1.03 1.03 1.03 1.03 1.03 1.00 1.00 1.0											
298.90 > 80.00				-0.002		150497	NC			5898	
298.90 > 99.00				0.007	1 000	1000E4	0.0012		00.7	124	
61 Sodium 1H,1H,2H,2H-perfluorohexame 327.00 > 307.00							0.0013	2.38(0.00-0.00)	99.1		
327.00 > 307.00 2.017 2.009 0.008 1.000 49393 0.9089 97.3 1983 D 7 13C2 PFHxA 315.00 > 270.00 2.051 2.043 0.008 6344598 62.7 125 38515 6 Perfluorohexanoic acid 313.00 > 269.00 2.051 2.043 0.008 1.000 124644 1.03 103 512 D 9 13C4-PFHpA 367.00 > 322.00 2.395 2.385 0.010 5279316 63.0 126 28917 10 Perfluoroheptanoic acid 363.00 > 319.00 2.395 2.385 0.010 1.000 109240 1.01 101 524 D 11 18O2 PFHxS 403.00 > 84.00 2.411 2.401 0.010 7167410 52.2 110 32029 8 Perfluorohexanesulfonic acid				orohexar	ne			,			
315.00 > 270.00 2.051 2.043 0.008 6344598 62.7 125 38515 6 Perfluorohexanoic acid 313.00 > 269.00 2.051 2.043 0.008 1.000 124644 1.03 103 512 D 9 13C4-PFHpA 367.00 > 322.00 2.395 2.385 0.010 5279316 63.0 126 28917 10 Perfluoroheptanoic acid 363.00 > 319.00 2.395 2.385 0.010 1.000 109240 1.01 101 524 D 11 18O2 PFHxS 403.00 > 84.00 2.411 2.401 0.010 7167410 52.2 110 32029 8 Perfluorohexanesulfonic acid			•			49393	0.9089		97.3	1983	
6 Perfluorohexanoic acid 313.00 > 269.00 2.051 2.043 0.008 1.000 124644 1.03 103 512 D 9 13C4-PFHpA 367.00 > 322.00 2.395 2.385 0.010 5279316 63.0 126 28917 10 Perfluoroheptanoic acid 363.00 > 319.00 2.395 2.385 0.010 1.000 109240 1.01 101 524 D 11 18O2 PFHxS 403.00 > 84.00 2.411 2.401 0.010 7167410 52.2 110 32029 8 Perfluorohexanesulfonic acid											
313.00 > 269.00 2.051 2.043 0.008 1.000 124644 1.03 103 512 D 9 13C4-PFHpA 367.00 > 322.00 2.395 2.385 0.010 5279316 63.0 126 28917 10 Perfluoroheptanoic acid 363.00 > 319.00 2.395 2.385 0.010 1.000 109240 1.01 101 524 D 11 18O2 PFHxS 403.00 > 84.00 2.411 2.401 0.010 7167410 52.2 110 32029 8 Perfluorohexanesulfonic acid				0.008		6344598	62.7		125	38515	
D 9 13C4-PFHpA 367.00 > 322.00 2.395 2.385 0.010 5279316 63.0 126 28917 10 Perfluoroheptanoic acid 363.00 > 319.00 2.395 2.385 0.010 1.000 109240 1.01 101 524 D 11 18O2 PFHxS 403.00 > 84.00 2.411 2.401 0.010 7167410 52.2 110 32029 8 Perfluorohexanesulfonic acid				0.000	1 000	124644	1 02		102	51 2	
367.00 > 322.00 2.395 2.385 0.010 5279316 63.0 126 28917 10 Perfluoroheptanoic acid 363.00 > 319.00 2.395 2.385 0.010 1.000 109240 1.01 101 524 D 11 1802 PFHxS 403.00 > 84.00 2.411 2.401 0.010 7167410 52.2 110 32029 8 Perfluorohexanesulfonic acid			2.043	0.008	1.000	124044	1.03		103	312	
363.00 > 319.00 2.395 2.385 0.010 1.000 109240 1.01 101 524 D 11 18O2 PFHxS 403.00 > 84.00 2.411 2.401 0.010 7167410 52.2 110 32029 8 Perfluorohexanesulfonic acid	•		2.385	0.010		5279316	63.0		126	28917	
D 11 18O2 PFHxS 403.00 > 84.00	10 Perfluorohe	ptanoic a	acid								
403.00 > 84.00 2.411 2.401 0.010 7167410 52.2 110 32029 8 Perfluorohexanesulfonic acid	363.00 > 319.00	2.395	2.385	0.010	1.000	109240	1.01		101	524	
8 Perfluorohexanesulfonic acid											
						7167410	52.2		110	32029	
200 NN			onic acid 2.401	0.010	1.000	162317	0.99		109	302	
399.00 > 80.00 2.411 2.401 0.010 1.000 162317 0.99 109 302	377.00 > 00.00	2.411	2.4U I	0.010	1.000				109	302	

Data File:	\\Chr	omNa\Sa	acrament	io\Chrom	Data\A8_N\201	70724-4579	8.b\2017.07.24A_0	04.d		
Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 12 M2-6:2FTS	;									
429.00 > 409.00		2.732	0.005		2657504	55.9		118	26449	
13 Sodium 1H,	1H,2H,2	H-perflu	orooctan	е						
427.00 > 407.00	2.737	2.732	0.005	1.000	56550	1.13		119	3060	
D 14 13C4 PFO	A									
417.00 > 372.00	2.766	2.754	0.012		5113826	62.3		125	28318	
* 62 13C2-PFOA										
415.00 > 370.00	2.759	2.754	0.005		5114344	50.0		100	32536	
15 Perfluorooct										
413.00 > 369.00		2.761	0.005	1.000	107413	0.9845	1 75 (0 00 1 10)	98.5	25.1	
413.00 > 169.00		2.761	0.005	1.000	61233		1.75(0.90-1.10)		917	
16 Perfluorohej				1 000	10/700	0.00		104	4057	
449.00 > 80.00		2.761	0.013	1.000	126720	0.99		104	4256	
D 18 13C4 PFO		2 127	0.005		E 4 E 1 4 E O	EO 4		10E	21741	
503.00 > 80.00		3.137	0.005		5451459	50.4		105	21741	
D 19 13C5 PFN/ 468.00 > 423.00		3.137	0.012		4000E 4.4	40.1		104	24769	
			0.013		4082544	62.1		124	24709	
20 Perfluoronoi 463.00 > 419.00		cia 3.137	0.013	1.000	78060	0.9390		93.9	261	
				1.000	76000	0.9390		93.9	201	
17 Perfluorooct 499.00 > 80.00		onic acio 3.137	น 0.013	1.000	156402	1.30		140	4452	
499.00 > 99.00		3.137	0.013	1.000	33614	1.30	4.65(0.90-1.10)	140	697	
D 21 13C8 FOS		0.107	0.010	1.000	00011		1.00(0.70 1.10)		077	
506.00 > 78.00		3 464	-0.003		9503729	52.0		104	23611	
22 Perfluorooct					7000727	02.0			20011	
498.00 > 78.00		3.464	0.006	1.000	173302	1.01		101	3994	
D 26 M2-8:2FTS		00.	0.000		., 5552				077.	
529.00 > 509.00		3.493	0.004		2430765	66.6		139	25847	
25 Sodium 1H,				10	2100700	00.0		.07	20017	
527.00 > 507.00		•	0.004	1.000	43814	0.9481		99.0	1941	
D 23 13C2 PFD/										
515.00 > 470.00		3.503	0.012		3991941	71.5		143	11784	
24 Perfluorode			0.0.2		3771711	, 1.0			11701	
513.00 > 469.00		3.503	0.012	1.000	73941	0.9451		94.5	297	
D 27 d3-NMeFO										
573.00 > 419.00		3.655	0.006		1346439	62.0		124	12550	
28 N-methyl pe						0=.0				
570.00 > 419.00		3.666	0.006	1.003	24102	0.9836		98.4	993	
29 Perfluorode										
599.00 > 80.00		3.821	0.005	1.000	72811	1.03		106	2821	
D 32 d5-NEtFOS		0.02.	0.000		, 20					
589.00 > 419.00		3.830	0.005		1416247	64.6		129	3949	
D 30 13C2 PFUr		0.000	0.000		1110217	01.0		127	0717	
565.00 > 520.00		3.839	0.004		2950078	72.4		145	11510	
33 N-ethyl perfl					2,00010	12.7		140	11010	
584.00 > 419.00		3.839	0.004	1.002	21517	0.8950		89.5	507	
31 Perfluoround			0.004	1.002	21017	0.0700		37.3	507	
563.00 > 519.00		3.839	0.004	1.000	- 68364	1 02		102	153	
300.00 / 017.00	0.010	5.557	5.554		Page 812 of 1	104 '2		102	.00	

Report Date: 24-Jul-2017 13:24:27 Chrom Revision: 2.2 26-Jun-2017 08:09:44 \\ChromNa\Sacramento\ChromData\A8_N\20170724-45798 b\2017 07 24A_004 d

Data File:	\\Chrc	omNa\S	acrament	o\Chrom	Data\A8_N\201	70724-4579	8.b\2017.07.24A_0	04.d		
Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 34 d-N-MeFO	SA-M									
515.00 > 169.00	3.950	3.946	0.004		2379170	50.5		101	609	
35 MeFOSA										
512.00 > 169.00	3.950	3.954	-0.004	1.000	44135	1.01		101	1755	
D 38 d-N-EtFOS										
531.00 > 169.00		4.130	0.0		2395018	49.0		98.1	5667	
D 36 13C2 PFD		4 120	0.000		2707550	42.4		105	4202	
615.00 > 570.00		4.139	0.008		2787559	62.4		125	6202	
37 Perfluorodo 613.00 > 569.00		4.139	0.008	1.000	50467	0.9742		97.4	25.6	
39 N-ethylperflu				1.000	30407	0.7742		77.4	20.0	
526.00 > 169.00		4.139		1.000	45261	1.02		102	1380	
41 Perfluorotrio	decanoic	acid								
663.00 > 619.00	4.410	4.404	0.006	1.000	50567	1.07		107	13.5	
D 43 13C2-PFT	eDA									
715.00 > 670.00	4.660	4.651	0.009		5401490	66.5		133	19940	
42 Perfluorotet										M
712.50 > 668.90		4.651	0.009	1.000	133646	1.25	7 (4(0,00,000)	125	8.1	M
713.00 > 169.00		4.651	-0.002	0.998	17500		7.64(0.00-0.00)		302	
D 44 13C2-PFH: 815.00 > 770.00		5.069	0.015		2823030	68.3		137	4858	
45 Perfluorohe:					2023030	00.3		137	4000	
813.00 > 769.00		5.078	0.006	1.000	95542	1.50		150	20.2	
46 Perfluorooct			3.000		70012	1.00		100	20.2	
913.00 > 869.00		5.448	0.014	1.000	45247	1.06		106	16.1	

OC Flag Legend Processing Flags

NC - Not Calibrated

Review Flags

M - Manually Integrated

Reagents:

LCPFC_FULL-L2_00004 Units: mL Amount Added: 1.00

Report Date: 24-Jul-2017 13:24:27 Chrom Revision: 2.2 26-Jun-2017 08:09:44 TestAmerica Sacramento Data File: **Injection Date:** 24-Jul-2017 11:42:12 Instrument ID: A8_N Lims ID: **CCVL** Client ID: Operator ID: SACINSTLCMS01 ALS Bottle#: 29 Worklist Smp#: 2 Injection Vol: 2.0 ul Dil. Factor: 1.0000 Method: Limit Group: LC PFC_DOD ICAL $A8_N$ 2 Perfluorobutyric acid D 113C4 PFBA D 313C5-PFPeA Exp1:m/z 217.00 > 172.00:Moving5PtAverage_x Exp1:m/z 212.90 > 169.00:Moving5PtAverage_x Exp1:m/z 267.90 > 223.00:Moving5PtAverage_x (000001X) 30-30-©28 0024 666<u>-</u> ∑55**-**∑20 ≻16- 18 33 12 22 11 1.2 1.5 0.9 1.8 2.1 1.4 1.7 2.0 1.2 1.5 1.8 2.1 5 Perfluorobutanesulfonic acid 5 Perfluorobutanesulfonic acid 4 Perfluoropentanoic acid Exp1:m/z 262.90 > 219.00:Moving5PtAverage_x Exp1:m/z 298.90 > 80.00:Moving5PtAverage x3Exp1:m/z 298.90 > 99.00:Moving5PtAverage_x3 V (X10000) 71 661 ×51 6 36 ×30 **∠**41[·] 31 18 21 12 11 2.2 2.3 1.6 1.9 1.7 2.0 2.0 2.3 1.1 1.4 1.4 1.3 1.1 61 Sodium 1H,1H,2H,2H-perfluorohexaDe 7 13C2 PFHxA 6 Perfluorohexanoic acid Exp1:m/z 313.00 > 269.00:Moving5PtAverage_x 28 56 ©24**-**© 20 0648- 0648- 0648- 0648- ×₁₆ ____16- -32 12 24 16 1.7 2.0 2.3 1.5 1.8 2.1 1.4 1.7 2.0 2.6 2.4 2.7 2.3 2.6 1.4 1.2 10 Perfluoroheptanoic acid 9 13C4-PFHpA D 11 1802 PFHxS Exp1:m/z 367.00 > 322.00:Moving5PtAverage_> Exp1:m/z 363.00 > 319.00:Moving5PtAverage_ Exp1:m/z 403.00 > 84.00:Moving5PtAverage_x3 (000020-×16-©28-0024-6⁴² 6₃₅ _28 16 12 21 14 0 0 2.0 2.3 2.9 1.9 2.2 2.5 Page 81Marof 1 2.0 2.3 2.6 2.9 1.7 2.6 1.6 1.7

3.0

3.3

0.7

1.9

3.1

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5.5

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3.6

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3.8

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4.4

3.1

3.4

3.7

4.0

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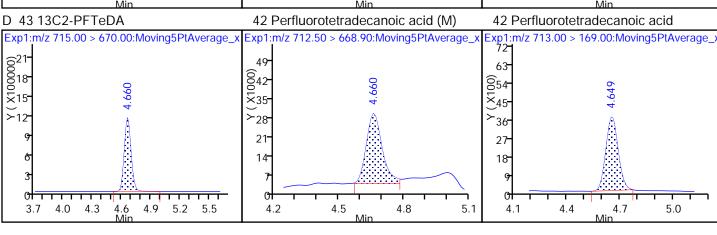
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4.2

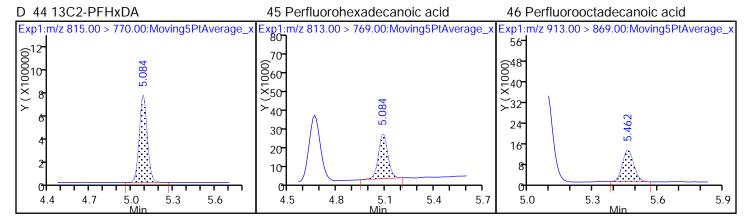
3.2

3.5



Report Date: 24-Jul-2017 13:24:27 Chrom Revision: 2.2 26-Jun-2017 08:09:44

Data File: \ChromNa\Sacramento\ChromData\A8_N\20170724-45798.b\2017.07.24A_004.d



Report Date: 24-Jul-2017 13:24:27 Chrom Revision: 2.2 26-Jun-2017 08:09:44 Manual Integration/User Assign Peak Report

TestAmerica Sacramento

Data File: \ChromNa\Sacramento\ChromData\A8_N\20170724-45798.b\2017.07.24A_004.d

Injection Date: 24-Jul-2017 11:42:12 Instrument ID: A8_N

Lims ID: CCVL

Client ID:

Operator ID: SACINSTLCMS01 ALS Bottle#: 29 Worklist Smp#: 2

Injection Vol: 2.0 ul Dil. Factor: 1.0000

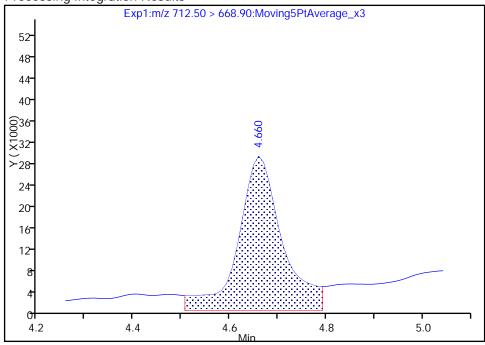
Method: A8_N Limit Group: LC PFC_DOD ICAL

Column: Detector EXP1

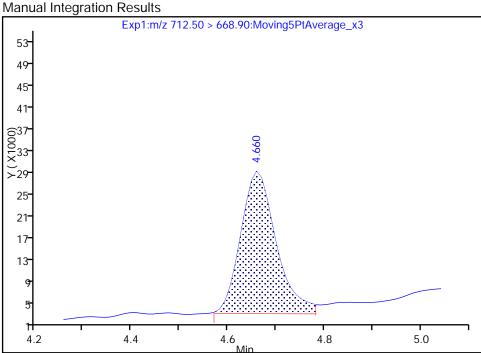
42 Perfluorotetradecanoic acid, CAS: 376-06-7

Signal: 1

RT: 4.66 Area: 184780 Amount: 1.724401 Amount Units: ng/ml **Processing Integration Results**



RT: 4.66
Area: 133646
Amount: 1.247209
Amount Units: ng/ml



Reviewer: chandrasenas, 24-Jul-2017 13:21:52

Audit Action: Manually Integrated

Audit Reason: Baseline

Page 819 of 1104

FORM VII LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-29732-1

SDG No.:

Lab Sample ID: CCV 320-175757/1 Calibration Date: 07/24/2017 20:00

Instrument ID: A8_N Calib Start Date: 07/23/2017 13:10

GC Column: GeminiC18 3×100 ID: 3.00 (mm) Calib End Date: 07/23/2017 13:58

Lab File ID: 2017.07.24AA_028.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanoic acid (PFBA)	AveID	0.8820	0.9374		53.1	50.0	6.3	25.0
Perfluoropentanoic acid (PFPeA)	AveID	1.042	0.9923		47.6	50.0	-4.8	25.0
Perfluorobutanesulfonic acid (PFBS)	AveID	1.489	1.511		44.9	44.2	1.5	25.0
Perfluorohexanoic acid (PFHxA)	AveID	0.9521	0.9065		47.6	50.0	-4.8	25.0
Perfluoroheptanoic acid (PFHpA)	AveID	1.026	0.9777		47.6	50.0	-4.7	25.0
Perfluorohexanesulfonic acid (PFHxS)	AveID	1.082	0.9858		41.5	45.5	-8.9	25.0
6:2FTS	AveID	0.8958	0.8518		45.1	47.4	-4.9	25.0
Perfluorooctanoic acid (PFOA)	AveID	1.067	0.9891		46.4	50.0	-7.3	25.0
Perfluoroheptanesulfonic Acid (PFHpS)	AveID	1.122	1.253		53.2	47.6	11.7	25.0
Perfluorononanoic acid (PFNA)	AveID	1.018	0.9508		46.7	50.0	-6.6	25.0
Perfluorooctanesulfonic acid (PFOS)	AveID	1.057	1.038		45.5	46.4	-1.9	25.0
8:2FTS	AveID	0.9107	0.8680		45.7	47.9	-4.7	25.0
Perfluorooctane Sulfonamide (FOSA)	AveID	0.9018	0.8948		49.6	50.0	-0.8	25.0
Perfluorodecanoic acid (PFDA)	AveID	0.9799	0.9289		47.4	50.0	-5.2	25.0
N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA)	AveID	0.9100	0.9241		50.8	50.0	1.5	25.0
Perfluorodecanesulfonic acid (PFDS)	AveID	0.6225	0.6731		52.1	48.2	8.1	25.0
N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)	AveID	0.8488	0.8254		48.6	50.0	-2.8	25.0
Perfluoroundecanoic acid (PFUnA)	L2ID		0.9616		46.8	50.0	-6.4	25.0
MeFOSA	AveID	0.9183	0.8895		48.4	50.0	-3.1	25.0
Perfluorododecanoic acid (PFDoA)	AveID	0.9292	0.8254		44.4	50.0	-11.2	25.0
N-EtFOSA-M	AveID	0.9274	0.9129		49.2	50.0	-1.6	25.0
Perfluorotridecanoic Acid (PFTriA)	AveID	0.8514	0.8610		50.6	50.0	1.1	25.0
Perfluorotetradecanoic acid (PFTeA)	AveID	1.922	1.879		48.9	50.0	-2.2	25.0
Perfluoro-n-hexadecanoic acid (PFHxDA)	L2ID		0.8600		53.7	50.0	7.3	25.0
Perfluoro-n-octadecanoic acid (PFODA)	AveID	0.7652	0.8788		57.4	50.0	14.8	25.0
13C4 PFBA	Ave	156025	161351		51.7	50.0	3.4	50.0
13C5 PFPeA	Ave	110496	114786		51.9	50.0	3.9	50.0
13C2 PFHxA	Ave	101156	109880		54.3	50.0	8.6	50.0
13C4-PFHpA	Ave	83824	91403		54.5	50.0	9.0	50.0
1802 PFHxS	Ave	137438	138032		47.5	47.3	0.4	50.0
M2-6:2FTS	Ave	47560	46183		46.1	47.5	-2.9	50.0

FORM VII LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-29732-1

SDG No.:

Lab Sample ID: CCV 320-175757/1 Calibration Date: 07/24/2017 20:00

Instrument ID: A8_N Calib Start Date: 07/23/2017 13:10

GC Column: GeminiC18 3×100 ID: 3.00 (mm) Calib End Date: 07/23/2017 13:58

Lab File ID: 2017.07.24AA_028.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE CF	CF	MIN CF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
13C4 PFOA	Ave	82143	86191		52.5	50.0	4.9	50.0
13C4 PFOS	Ave	108200	96791		42.8	47.8	-10.5	50.0
13C5 PFNA	Ave	65740	66393		50.5	50.0	1.0	50.0
13C8 FOSA	Ave	182802	170266		46.6	50.0	-6.9	50.0
M2-8:2FTS	Ave	36500	32386		42.5	47.9	-11.3	50.0
13C2 PFDA	Ave	55836	54898		49.2	50.0	-1.7	50.0
d3-NMeFOSAA	Ave	21732	19126		44.0	50.0	-12.0	50.0
d5-NEtFOSAA	Ave	21931	21026		47.9	50.0	-4.1	50.0
13C2 PFUnA	Ave	40729	41702		51.2	50.0	2.4	50.0
d-N-MeFOSA-M	Ave	47115	45477		48.3	50.0	-3.5	50.0
13C2 PFDoA	Ave	44655	42599		47.7	50.0	-4.6	50.0
d-N-EtFOSA-M	Ave	48834	47505		48.6	50.0	-2.7	50.0
13C2-PFTeDA	Ave	81216	82254		50.6	50.0	1.3	50.0
13C2-PFHxDA	Ave	41307	44625		54.0	50.0	8.0	50.0

Report Date: 25-Jul-2017 11:29:47 Chrom Revision: 2.2 26-Jun-2017 08:09:44

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170725-45831.b\2017.07.24AA_028.d

Lims ID: CCV L5

Client ID:

Sample Type: CCV

Inject. Date: 24-Jul-2017 20:00:55 ALS Bottle#: 32 Worklist Smp#: 1

Injection Vol: 2.0 ul Dil. Factor: 1.0000

Sample Info: CCV L5

Misc. Info.: Plate: 1 Rack: 1

Operator ID: SACINSTLCMS01 Instrument ID: A8_N

Sublist: chrom-A8_N*sub18

Method: \ChromNa\Sacramento\ChromData\A8_N\20170725-45831.b\A8_N.m

Limit Group: LC PFC_DOD ICAL

Last Update: 25-Jul-2017 11:29:47 Calib Date: 23-Jul-2017 13:58:26

Integrator: Picker

Quant Method: Isotopic Dilution Quant By: Initial Calibration

Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20170723-45765.b\2017.07.23ICAL_010.d

Column 1 : Det: EXP1

Process Host: XAWRK029

First Level Reviewer: chandrasenas Date: 25-Jul-2017 11:27:14

First Level Reviewer: chandrasenas						Date: 25-Jul-2017 11:27:14			•		
	Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
2 Perfluorobutyric acid											
	212.90 > 169.00	,	1.547	0.0	1.000	7562500	53.1		106	3884	
	D 113C4 PFBA										
	217.00 > 172.00	1.547	1.547	0.0		8067530	51.7		103	38430	
	4 Perfluoropen										
	262.90 > 219.00		1.756	0.0	1.000	5694948	47.6		95.2	3305	
	D 3 13C5-PFPe		1 754	0.0		E720200	E1 0		104	74400	
	267.90 > 223.00		1.756	0.0		5739309	51.9		104	76408	
	5 Perfluorobuta 298.90 > 80.00		nic acid 1.784	0.0	1.000	9220802	44.9		101	5768	
	298.90 > 99.00		1.784	0.0	1.000	3815568	77.7	2.42(0.00-0.00)	101	5634	
	D 47 13C3-PFBS	S						,			
	301.90 > 83.00	1.784	1.784	0.0		145282	NC			6881	
	61 Sodium 1H,		•		ne						
	327.00 > 307.00	1.997	1.997	0.0	1.000	2092077	46.6		99.9	59924	
	6 Perfluorohex										
	313.00 > 269.00		2.032	0.0	1.000	4980449	47.6		95.2	12805	
	D 7 13C2 PFHx. 315.00 > 270.00		2.032	0.0		5493990	E 4 2		109	12042	
				0.0		5493990	54.3		109	43863	
	10 Perfluoroher 363.00 > 319.00		2.366	0.0	1.000	4468281	47.6		95.3	11503	
	D 9 13C4-PFHp		2.000	0.0	1.000	1100201	17.0		70.0	11000	
	367.00 > 322.00		2.366	0.0		4570166	54.5		109	23930	
	8 Perfluorohex	anesulfo	nic acid	l							
	399.00 > 80.00	2.382	2.382	0.0	1.000	6190955	41.5		91.1	4711	
	D 11 18O2 PFH	xS									
	403.00 > 84.00	2.382	2.382	0.0		6528900	47.5		100	26550	
						5 000 11					

 Report Date: 25-Jul-2017 11:29:47
 Chrom Revision: 2.2 26-Jun-2017 08:09:44

 Data File:
 \\ChromNa\Sacramento\ChromData\A8_N\20170725-45831.b\2017.07.24AA_028.d

Data File:	\\Cnrc	omiva\5	acrament	:o\Cnrom	Data\A8_N\201	70725-4583	1.b\2017.07.24AA_0	J28.a		
Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
13 Sodium 1H,	1⊔ ว⊔ ว	∐ norflu	orooctan	^						
427.00 > 407.00	2.704			1.000	1864663	45.1		95.1	55898	
D 12 M2-6:2FTS 429.00 > 409.00		2.704	0.0		2193704	46.1		97.1	32779	
* 62 13C2-PFOA 415.00 > 370.00		2.725	0.0		4297393	50.0		100	27783	
15 Perfluorooct	anoic ac	cid								
413.00 > 369.00		2.733	0.0	1.000	4262516	46.4		92.7	757	
413.00 > 169.00		2.733	0.0	1.000	2446320		1.74(0.90-1.10)		11893	
D 14 13C4 PFO							,			
417.00 > 372.00	2.733	2.733			4309567	52.5		105	29596	
16 Perfluoroher										
449.00 > 80.00	2.740	2.740	0.0	1.000	5773642	53.2		112	29805	
17 Perfluorooct	ane sulf	onic acid	d							
499.00 > 80.00		3.108		1.000	4659560	45.5		98.1	7634	
499.00 > 99.00		3.108	0.0	1.000	1005472		4.63(0.90-1.10)		22646	
20 Perfluoronor							,			
463.00 > 419.00			0.0	1.000	3156234	46.7		93.4	7006	
		3.108	0.0	1.000	3150234	46.7		93.4	7006	
D 19 13C5 PFNA										
468.00 > 423.00	3.108	3.108	0.0		3319649	50.5		101	16857	
D 18 13C4 PFOS	S									
503.00 > 80.00		3.108	0.0		4626626	42.8		89.5	17054	
22 Perfluorooct										
				1 000	7/17200	40.7		00.2	15040	
498.00 > 78.00				1.000	7617380	49.6		99.2	15242	
25 Sodium 1H,		•								
527.00 > 507.00	3.457	3.457	0.0	1.000	1346447	45.7		95.3	16422	
D 21 13C8 FOSA	Α									
506.00 > 78.00		3.457	0.0		8513317	46.6		93.1	19373	
		0.107	0.0		0010017	10.0		70.1	17070	
D 26 M2-8:2FTS		0.457	0.0		4554004	40.5		00.7	47050	
529.00 > 509.00	3.457	3.457	0.0		1551281	42.5		88.7	17859	
24 Perfluorodeo	canoic a	cid								
513.00 > 469.00	3.467	3.467	0.0	1.000	2549869	47.4		94.8	8988	
D 23 13C2 PFDA	Δ									
515.00 > 470.00		3.467	0.0		2744923	49.2		98.3	11109	
		3.407	0.0		2/44/25	77.2		70.5	11107	
D 27 d3-NMeFO										
573.00 > 419.00	3.621	3.621	0.0		956312	44.0		88.0	5933	
28 N-methyl pe	rfluoroo	ctane su	lfonami							
570.00 > 419.00	3.631	3.631	0.0	1.003	883677	50.8		102	7933	
29 Perfluorodeo	ana Sul	lfonic ac	id							
599.00 > 80.00		3.778		1.000	3140000	52.1		108	9734	
		3.770	0.0	1.000	3140000	32.1		100	7734	
D 32 d5-NEtFOS										
589.00 > 419.00	3.788	3.788	0.0		1051299	47.9		95.9	3147	
31 Perfluoround	decanoio	c acid								
563.00 > 519.00	3.797	3.797	0.0	1.000	2005052	46.8		93.6	2589	
								· •		
33 N-ethyl perfl				1 000	0/771/	40.7		07.0	70/1	
584.00 > 419.00		3.797	U.U	1.003	867716	48.6		97.2	7361	
D 30 13C2 PFUr	nΑ									
565.00 > 520.00	3.797	3.797	0.0		Page 823 of 1	104 ^{51.2}		102	7389	
					. 490 020 01 1					

Report Date: 25-Jul-2017 11:29:47 Chrom Revision: 2.2 26-Jun-2017 08:09:44 Data File: \\ChromNa\\Sacramento\ChromData\\A8 N\20170725-45831.b\2017.07.24AA 028.d

Data File:	\\Cnrc	miva\Sa	acrament	o\Cnrom	Data\A8_N\201	70725-4583	1.b\2017.07.24AA_0	J28.a		
Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 34 d-N-MeFOSA-M										
515.00 > 169.00		3.948	0.0		2273826	48.3		96.5	835	
35 MeFOSA										
512.00 > 169.00	3.957	3.957	0.0	1.000	2022454	48.4		96.9	5854	
37 Perfluorodo	decanoio	acid								
613.00 > 569.00	4.095	4.095	0.0	1.000	1758090	44.4		88.8	1844	
D 36 13C2 PFD	οA									
615.00 > 570.00	4.095	4.095	0.0		2129957	47.7		95.4	4840	
D 38 d-N-EtFOS										
531.00 > 169.00	4.138	4.138	0.0		2375266	48.6		97.3	5321	
39 N-ethylperflu										
526.00 > 169.00	4.146	4.146	0.0	1.000	2168444	49.2		98.4	6189	
41 Perfluorotrid										
663.00 > 619.00			0.0	1.000	1833780	50.6		101	906	
42 Perfluoroteti										
712.50 > 668.90		4.596	0.0	1.000	4003181	48.9	0.27(0.00.0.00)	97.8	395	
713.00 > 169.00		4.596	0.0	1.000	478241		8.37(0.00-0.00)		5489	
D 43 13C2-PFT6		4 EO4	0.0		4112404	EO 4		101	20201	
715.00 > 670.00		4.596	0.0		4112686	50.6		101	20381	
D 44 13C2-PFH; 815.00 > 770.00		5.018	0.0		2231267	54.0		108	3769	
			0.0		2231207	34.0		100	3709	
45 Perfluorohex 813.00 > 769.00		oic acid 5.018	0.0	1.000	1831848	53.7		107	213	
46 Perfluorooct			0.0	1.000	1031040	55.7		107	213	
913.00 > 869.00		5.368	0.0	1.000	1871771	57.4		115	892	
		5.500	5.0	1.000	10/1//1	57.4		113	0 / 2	
	4 A IA A									

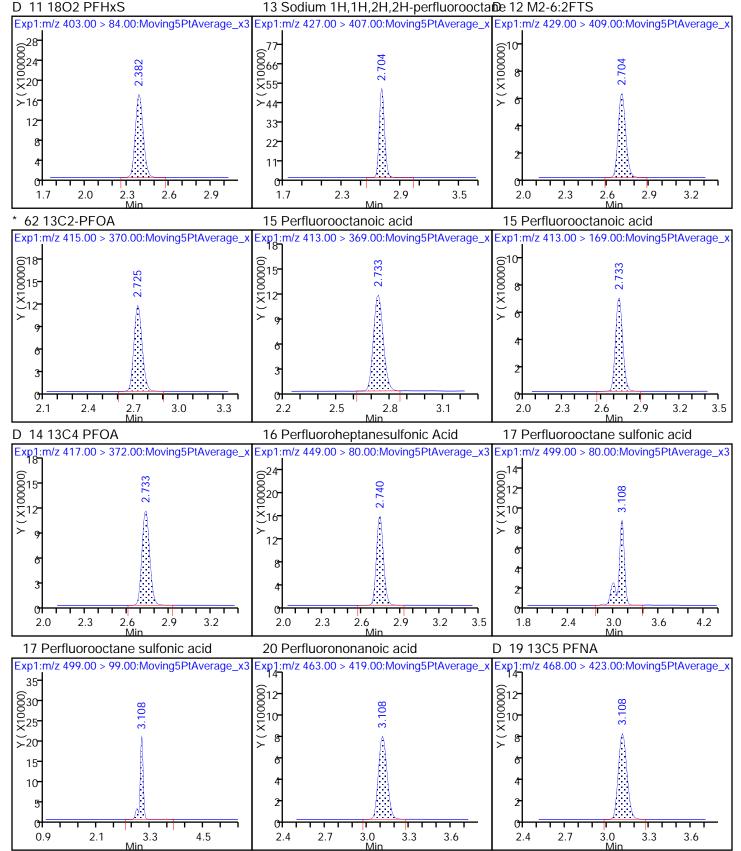
OC Flag Legend Processing Flags

NC - Not Calibrated

Reagents:

LCPFC_FULL-L5_00008 Amount Added: 1.00 Units: mL

Chrom Revision: 2.2 26-Jun-2017 08:09:44 Report Date: 25-Jul-2017 11:29:47 TestAmerica Sacramento Data File: **Injection Date:** 24-Jul-2017 20:00:55 Instrument ID: A8_N Lims ID: CCV L5 Client ID: Operator ID: SACINSTLCMS01 ALS Bottle#: 32 Worklist Smp#: Injection Vol: 2.0 ul Dil. Factor: 1.0000 Method: Limit Group: LC PFC_DOD ICAL $A8_N$ 2 Perfluorobutyric acid D 113C4 PFBA 4 Perfluoropentanoic acid Exp1:m/z 217.00 > 172.00:Moving5PtAverage_x Exp1:m/z 262.90 > 219.00:Moving5PtAverage_x Exp1:m/z 212.90 > 169.00:Moving5PtAverage_x (00030 X25 (28 000024 ×20 00001 × × 24 -20 ≻16⁻ 18 15 12 10 1.2 1.5 1.8 1.2 1.5 2.1 1.8 2.1 1.4 2.0 2.3 5 Perfluorobutanesulfonic acid D 3 13C5-PFPeA 5 Perfluorobutanesulfonic acid Exp1:m/z 267.90 > 223.00:Moving5PtAverage_x Exp1:m/z 298.90 > 80.00:Moving5PtAverage_x3 Exp1:m/z 298.90 > 99.00:Moving5PtAverage_x3 00024 00024 ×20 (42-000036-30-(000015 X) 18 12 2.4 1.5 1.8 1.4 2.0 2.3 2.0 2.3 1.2 2.1 1.1 1.1 1.4 61 Sodium 1H,1H,2H,2H-perfluorohexan 6 Perfluorohexanoic acid 7 13C2 PFHxA Exp1:m/z 315.00 > 270.00:Moving5PtAverage_x 21 24 Y (X100000) (000018-15-12-(00020 ×16 12 0.9 1.5 2.1 2.7 1.7 2.0 1.4 1.7 2.0 2.6 1.4 2.3 2.6 2.3 1.1 10 Perfluoroheptanoic acid 8 Perfluorohexanesulfonic acid D 9 13C4-PFHpA Exp1:m/z 399.00 > 80.00:Moving5PtAverage_x3 Exp1:m/z 363.00 > 319.00:Moving5PtAverage_x Exp1:m/z 367.00 > 322.00:Moving5PtAverage_x (21° 000 18° 15° (018-100015-(018 to 000 15 to 0000 15 to 000 15 \sum_{12} 0 0| 0 1.8 2.1 2.4 2.7 3.0 1.7 2.9 1.5 1.8 2.1 2.4 2.7 3.0 1.5



4.0

4.3

3.4

3.1

0

3.1

3.4

4.0

4.3

22⁻

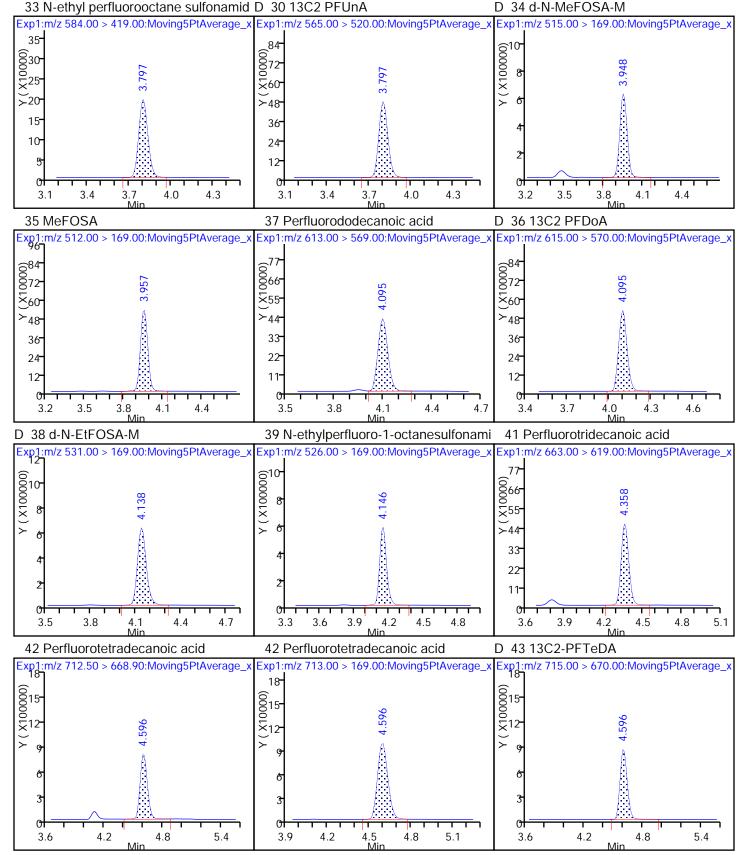
3.1

3.4

3.7

4.0

4.3



Report Date: 25-Jul-2017 11:29:47 Chrom Revision: 2.2 26-Jun-2017 08:09:44 Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170725-45831.b\2017.07.24AA_028.d

D 44 13C2-PFHxDA 45 Perfluorohexadecanoic acid 46 Perfluorooctadecanoic acid Exp1:m/z 913.00 > 869.00:Moving5PtAverage_x Exp1:m/z 815.00 > 770.00:Moving5PtAverage_x Exp1:m/z 813.00 > 769.00:Moving5PtAverage_x Y (X100000) (70-060-5.368 670 660 5.018 ∑₅₀-∑₅₀-≻₄₀-≻₄₀-30 30 20 20 10 10 0 0 0 4.4 4.7 5.0 5.3 5.6 4.2 4.5 4.8 5.1 5.4 5.7 4.7 5.0 5.3 5.6 5.9

Lab Name: TestAmerica Sacramento Job No.: 320-29732-1

SDG No.:

Lab Sample ID: CCV 320-175757/4 Calibration Date: 07/24/2017 20:21

Instrument ID: A8_N Calib Start Date: 07/23/2017 13:10

GC Column: GeminiC18 3×100 ID: 3.00 (mm) Calib End Date: 07/23/2017 13:58

Lab File ID: 2017.07.24AA_031.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanoic acid (PFBA)	AveID	0.8820	0.9212		20.9	20.0	4.4	25.0
Perfluoropentanoic acid (PFPeA)	AveID	1.042	1.022		19.6	20.0	-1.9	25.0
Perfluorobutanesulfonic acid (PFBS)	AveID	1.489	1.608		19.1	17.7	8.0	25.0
Perfluorohexanoic acid (PFHxA)	AveID	0.9521	0.9205		19.3	20.0	-3.3	25.0
Perfluoroheptanoic acid (PFHpA)	AveID	1.026	1.002		19.5	20.0	-2.4	25.0
Perfluorohexanesulfonic acid (PFHxS)	AveID	1.082	1.012		17.0	18.2	-6.4	25.0
6:2FTS	AveID	0.8958	0.8829		18.7	19.0	-1.4	25.0
Perfluoroheptanesulfonic Acid (PFHpS)	AveID	1.122	1.262		21.4	19.0	12.5	25.0
Perfluorooctanoic acid (PFOA)	AveID	1.067	1.051		19.7	20.0	-1.5	25.0
Perfluorononanoic acid (PFNA)	AveID	1.018	0.9643		18.9	20.0	-5.3	25.0
Perfluorooctanesulfonic acid (PFOS)	AveID	1.057	1.065		18.7	18.6	0.8	25.0
8:2FTS	AveID	0.9107	0.9202		19.4	19.2	1.1	25.0
Perfluorooctane Sulfonamide (FOSA)	AveID	0.9018	0.9315		20.7	20.0	3.3	25.0
Perfluorodecanoic acid (PFDA)	AveID	0.9799	0.8900		18.2	20.0	-9.2	25.0
N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA)	AveID	0.9100	0.9110		20.0	20.0	0.1	25.0
Perfluorodecanesulfonic acid (PFDS)	AveID	0.6225	0.6850		21.2	19.3	10.1	25.0
N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)	AveID	0.8488	0.8562		20.2	20.0	0.9	25.0
Perfluoroundecanoic acid (PFUnA)	L2ID		1.076		20.9	20.0	4.4	25.0
MeFOSA	AveID	0.9183	0.8960		19.5	20.0	-2.4	25.0
Perfluorododecanoic acid (PFDoA)	AveID	0.9292	0.9904		21.3	20.0	6.6	25.0
N-EtFOSA-M	AveID	0.9274	0.9344		20.2	20.0	0.8	25.0
Perfluorotridecanoic Acid (PFTriA)	AveID	0.8514	1.037		24.4	20.0	21.8	25.0
Perfluorotetradecanoic acid (PFTeA)	AveID	1.922	2.390		24.9	20.0	24.3	25.0
Perfluoro-n-hexadecanoic acid (PFHxDA)	L2ID		1.217		30.1	20.0	50.4*	25.0
Perfluoro-n-octadecanoic acid (PFODA)	AveID	0.7652	1.104		28.8	20.0	44.2*	25.0
13C4 PFBA	Ave	156025	170093		54.5	50.0	9.0	50.0
13C5 PFPeA	Ave	110496	120405		54.5	50.0	9.0	50.0
13C2 PFHxA	Ave	101156	113025		55.9	50.0	11.7	50.0
13C4-PFHpA	Ave	83824	94663		56.5	50.0	12.9	50.0
1802 PFHxS	Ave	137438	138985		47.8	47.3	1.1	50.0
M2-6:2FTS	Ave	47560	45911		45.9	47.5	-3.5	50.0

Lab Name: TestAmerica Sacramento Job No.: 320-29732-1

SDG No.:

Lab Sample ID: CCV 320-175757/4 Calibration Date: 07/24/2017 20:21

Instrument ID: A8_N Calib Start Date: 07/23/2017 13:10

GC Column: GeminiC18 3×100 ID: 3.00 (mm) Calib End Date: 07/23/2017 13:58

Lab File ID: 2017.07.24AA_031.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE CF	CF	MIN CF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
13C4 PFOA	Ave	82143	88695		54.0	50.0	8.0	50.0
13C4 PFOS	Ave	108200	100104		44.2	47.8	-7.5	50.0
13C5 PFNA	Ave	65740	69492		52.9	50.0	5.7	50.0
13C8 FOSA	Ave	182802	177867		48.7	50.0	-2.7	50.0
M2-8:2FTS	Ave	36500	34924		45.8	47.9	-4.3	50.0
13C2 PFDA	Ave	55836	61632		55.2	50.0	10.4	50.0
d3-NMeFOSAA	Ave	21732	20578		47.3	50.0	-5.3	50.0
d5-NEtFOSAA	Ave	21931	21152		48.2	50.0	-3.6	50.0
13C2 PFUnA	Ave	40729	45507		55.9	50.0	11.7	50.0
d-N-MeFOSA-M	Ave	47115	45766		48.6	50.0	-2.9	50.0
13C2 PFDoA	Ave	44655	46012		51.5	50.0	3.0	50.0
d-N-EtFOSA-M	Ave	48834	47471		48.6	50.0	-2.8	50.0
13C2-PFTeDA	Ave	81216	109330		67.3	50.0	34.6	50.0
13C2-PFHxDA	Ave	41307	63303		76.6	50.0	53.3*	50.0

Report Date: 25-Jul-2017 11:29:51 Chrom Revision: 2.2 26-Jun-2017 08:09:44

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170725-45831.b\2017.07.24AA_031.d

Lims ID: CCV L4

Client ID:

Sample Type: CCV

Inject. Date: 24-Jul-2017 20:21:37 ALS Bottle#: 31 Worklist Smp#: 4

Injection Vol: 2.0 ul Dil. Factor: 1.0000

Sample Info: CCV L4

Misc. Info.: Plate: 1 Rack: 1

Operator ID: SACINSTLCMS01 Instrument ID: A8_N

Sublist: chrom-A8_N*sub18

Method: \ChromNa\Sacramento\ChromData\A8_N\20170725-45831.b\A8_N.m

Limit Group: LC PFC_DOD ICAL

Last Update: 25-Jul-2017 11:29:51 Calib Date: 23-Jul-2017 13:58:26

Integrator: Picker

Quant Method: Isotopic Dilution Quant By: Initial Calibration

Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20170723-45765.b\2017.07.23ICAL_010.d

Column 1: Det: EXP1

Process Host: XAWRK029

First Level Reviewer: chandrasenas Date: 25-Jul-2017 11:29:39

Reviewer, Chandraserias				Date. 25-3ul-2017 11.29			7		
RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
yric acid									
1.556	1.547	0.009	1.000	3133774	20.9		104	1501	
١									
		0.009		8504673	54.5		109	38396	
		0.019	1 000	2462230	10.6		08 1	1/137	
	1.730	0.017	1.000	2402230	17.0		70.1	1437	
1.775	1.756	0.019		6020245	54.5		109	54904	
anesulfo	nic acid								
1.802	1.784	0.018	1.000	3951955	19.1	0 (0(0 00 0 00)	108	2538	
	1.784	0.018	1.000	1522350		2.60(0.00-0.00)		2318	
	1 784	0.009		144772	NC			8247	
			ne	,,_	110			0217	
	•	0.012	1.000	831848	18.7		99.9	33289	
kanoic ac	cid								
2.054	2.032	0.022	1.000	2080892	19.3		96.7	7634	
	2.022	0.000		F/F12/F	FF 0		110	27412	
		0.022		5651265	55.9		112	3/413	
•		0.028	1.000	1896792	19.5		97.6	6735	
2.386	2.366	0.020		4733155	56.5		113	26577	
	2.382	0.020	1.000	2560383	17.0		93.6	3530	
	າງວາ	0.020		4572004	<i>1</i> 7 0		101	26121	
2.402	2.362	0.020					101	20121	
	PT yric acid 1.556 1.556 ntanoic a 1.775 eA 1.775 anesulfo 1.802 1.802 S 1.793 1H,2H,2 2.009 (anoic acid 2.054 (A) 2.054 (A) 2.394 (A) 2.386	yric acid 1.556 1.547 1.556 1.547 1.556 1.547 1.756 1.775 1.756 2.40 1.775 1.756 2.40 2.009 1.784 1.793 1.784 1.793 1.784 1.793 1.784 1.793 1.784 2.009 1.997 2.009 1.997 2.009 2.032 2.054 2.032 2.054 2.032 2.386 2.366 2.386 2.366 2.402 2.382 xS	yric acid 1.556	yric acid 1.556	yric acid 1.556	PRT RT RT RT REL RESPONSE AMOUNT Ng/ml PRT RT RT RT REL RT RESPONSE RESPON	RT	RT	RT EXP RT DLT RT REL RT Response Amount ng/ml Ratio(Limits) %Rec S/N criticacid 1.556 1.547 0.009 1.000 3133774 20.9 104 1501 Analocic acid 1.775 1.756 0.019 1.000 2462230 19.6 98.1 1437 Analocic acid 1.775 1.756 0.019 6020245 54.5 109 54904 anesulfonic acid 1.802 1.784 0.018 1.000 3951955 19.1 108 2538 1.802 1.784 0.018 1.000 1522350 2.60(0.00-0.00) 2318 1.793 1.784 0.009 144772 NC 8247 1H,2H,2H-perfluorohexane 2.2099 1.997 0.012 1.000 831848 18.7 99.9 33289 anoic acid 2.2054 2.032 0.022 5651265 55.9 112 37413 planoic acid 2.2394 2.366 0.028 1.000 1896792 19.5 97.6 6735

Report Date: 25-Jul-2017 11:29:51 Chrom Revision: 2.2 26-Jun-2017 08:09:44

Report Dat Data File:	e: 25-Jı				o\Chrom			26-Jun-2017 08:09 1.b\2017.07.24AA_			
Signa	nl	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
13 Sodiu 427.00 > 4	107.00		H-perflud 2.704		e 1.000	768494	18.7		98.6	20426	
D 12 M2-6 429.00 > 4 * 62 13C2	109.00	2.729	2.704	0.025		2180774	45.9		96.5	36173	
415.00 > 3 15 Perflu	370.00		2.725	0.026		4448232	50.0		100	28021	
413.00 > 3 413.00 > 1	69.00 69.00	2.758 2.758	2.733 2.733	0.025 0.025	1.000 1.000	1863581 1017744	19.7	1.83(0.90-1.10)	98.5	436 9499	
D 14 13C4 417.00 > 3	372.00	2.758	2.733	0.025		4434762	54.0		108	26891	
16 Perflu 449.00 > 8 17 Perflu	30.00	2.758	2.740	0.018	1.000	2404704	21.4		112	24006	
499.00 > 8 499.00 > 9	30.00 99.00	3.132 3.132	3.108 3.108	0.024 0.024	1.000 1.000	1979272 415063	18.7	4.77(0.90-1.10)	101	90859 3253	
20 Perflu 463.00 > 4 D 19 13C5	19.00	3.132	3.108	0.024	1.000	1340178	18.9		94.7	4803	
468.00 > 4 D 18 13C4	23.00	3.132	3.108	0.024		3474600	52.9		106	20213	
503.00 > 8	30.00	3.132	3.108 onamide	0.024		4784968	44.2		92.5	18685	
498.00 > 7 25 Sodiu	8.00	3.486	3.457	0.029	1.000 ne	3313537	20.7		103	13030	
527.00 > 5 D 21 13C8			3.457	0.029	1.000	615766	19.4		101	13863	
506.00 > 7 D 26 M2-8		3.486	3.457	0.029		8893359	48.7		97.3	19875	
529.00 > 5 24 Perflu	orodeca	anoic a	3.457 cid	0.029		1672846	45.8		95.7	20841	
513.00 > 4 D 23 13C2	2 PFDA		3.467	0.028	1.000	1097093	18.2		90.8	6295	
515.00 > 4 D 27 d3-N	MeFOS	SAA	3.467	0.028		3081576	55.2		110	10661	
573.00 > 4 28 N-met	thyl perf	fluorood			1 000	1028883	47.3		94.7	7952	
570.00 > 4 29 Perflu	orodeca	ane Sul			1.000	374908	20.0		100	8666	
599.00 > 8 D 32 d5-N 589.00 > 4	EtFOS/	4 Α	3.7783.788	0.027	1.000	1322123 1057618	21.2 48.2		110 96.4	12687 3622	
31 Perflu 563.00 > 5	oround	ecanoic		0.026	1.000	979410	20.9		104	1619	
33 N-ethy 584.00 > 4	yl perflu	oroocta		namid	1.002	362214	20.2		101	4825	
D 30 13C2 565.00 > 5	2 PFUn	А	3.797	0.026		Page 833 ¹ of 1			112	8618	

Report Date: 25-Jul-2017 11:29:51 Chrom Revision: 2.2 26-Jun-2017 08:09:44 Data File:

Data File:	\\Cnrc	mina\Sa	icrament	o\Cnrom	Data\A8_N\201	70725-4583	1.b\2017.07.24AA_0	J31.0		
Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 34 d-N-MeFOS	SA-M									
515.00 > 169.00		3.948	0.025		2288281	48.6		97.1	805	
35 MeFOSA										
512.00 > 169.00	3.981	3.957	0.023	1.000	820073	19.5		97.6	5191	
37 Perfluorodoo	decanoio	acid								
613.00 > 569.00	4.114	4.095	0.019	1.000	911439	21.3		107	874	
D 36 13C2 PFDc										
615.00 > 570.00		4.095	0.028		2300597	51.5		103	4558	
D 38 d-N-EtFOS										
531.00 > 169.00		4.138	0.027		2373552	48.6		97.2	5298	
39 N-ethylperflu				4 000	007400	00.0		404	E 440	
526.00 > 169.00		4.146	0.019	1.000	887102	20.2		101	5413	
41 Perfluorotrid 663.00 > 619.00			0.024	1.000	954573	24.4		122	384	
			0.024	1.000	904073	24.4		122	304	
42 Perfluorotetr 712.50 > 668.90		4.596	0.030	1.000	2199009	24.9		124	218	
713.00 > 169.00		4.596	0.030	0.998	265769	24.7	8.27(0.00-0.00)	124	4177	
D 43 13C2-PFTe							(,			
715.00 > 670.00		4.596	0.030		5466508	67.3		135	12500	
D 44 13C2-PFHx	ďΑ									
815.00 > 770.00		5.018	0.015		3165169	76.6		153	4808	
45 Perfluorohex	kadecan	oic acid								
813.00 > 769.00	5.033	5.018	0.015	1.000	1119985	30.1		150	137	
46 Perfluorooct	adecano	oic acid								
913.00 > 869.00	5.387	5.368	0.019	1.000	1015539	28.8		144	511	
	o m d									

OC Flag Legend Processing Flags

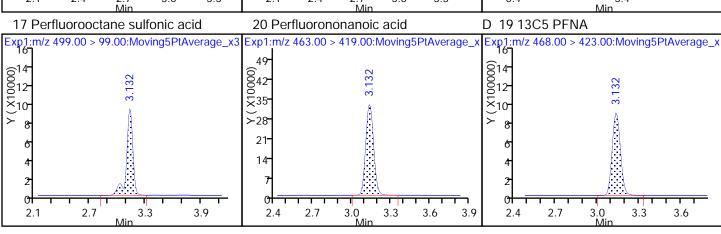
NC - Not Calibrated

Reagents:

LCPFC_FULL-L4_00008 Amount Added: 1.00 Units: mL

Chrom Revision: 2.2 26-Jun-2017 08:09:44 Report Date: 25-Jul-2017 11:29:51 TestAmerica Sacramento Data File: **Injection Date:** 24-Jul-2017 20:21:37 Instrument ID: A8_N Lims ID: CCV L4 Client ID: Operator ID: SACINSTLCMS01 ALS Bottle#: 31 Worklist Smp#: Injection Vol: 2.0 ul Dil. Factor: 1.0000 Method: Limit Group: LC PFC_DOD ICAL $A8_N$ 2 Perfluorobutyric acid D 113C4 PFBA 4 Perfluoropentanoic acid Exp1:m/z 212.90 > 169.00:Moving5PtAverage_x Exp1:m/z 217.00 > 172.00:Moving5PtAverage_x Exp1:m/z 262.90 > 219.00:Moving5PtAverage_x (X100000) (X100000) (X100000) (015-0000012 X) 9 (000001X 30 30 18 12 1.2 1.5 1.8 1.9 2.1 1.1 1.4 2.0 2.3 1.0 1.3 1.6 2.2 2.5 5 Perfluorobutanesulfonic acid 5 Perfluorobutanesulfonic acid 3 13C5-PFPeA D Exp1:m/z 267.90 > 223.00:Moving5PtAverage_x Exp1:m/z 298.90 > 80.00:Moving5PtAverage_x3 Exp1:m/z 298.90 > 99.00:Moving5PtAverage_x3 (0000015-(0000015-70 028 024 060-×50-×20 30 20 10 1.7 2.0 2.3 1.4 1.4 2.0 2.3 1.7 2.0 1.1 1.4 2.3 1.1 61 Sodium 1H,1H,2H,2H-perfluorohexan@ Perfluorohexanoic acid 7 13C2 PFHxA Exp1:m/z 327.00 > 307.00:Moving5PtAverage_x | Exp1:m/z 313.00 > 269.00:Moving5PtAverage_x Exp1:m/z 315.00 > 270.00:Moving5PtAverage_x ©24 ©20 0078- 0065-1065-)24 >24 ×₁₆ 18 39 12 26 13 1.5 1.8 2.1 2.4 1.8 2.1 2.7 1.5 1.8 2.1 2.7 1.5 2.4 2.4 2.7 9 13C4-PFHpA 8 Perfluorohexanesulfonic acid 10 Perfluoroheptanoic acid Exp1:m/z 399.00 > 80.00:Moving5PtAverage_x3 Exp1:m/z 363.00 > 319.00:Moving5PtAverage_x Exp1:m/z 367.00 > 322.00:Moving5PtAverage_x 21-000018 ×15-684 672 ©77-0066-×60 ×55 ≻48 36 33 22 24 12 11 0 0| 01.9 2.2 2.5 2.8 1.7 2.9 1.9 2.2 2.5 2.8 3.1 1.6 1.6

Report Date: 25-Jul-2017 11:29:51 Chrom Revision: 2.2 26-Jun-2017 08:09:44 Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170725-45831.b\2017.07.24AA_031.d D 11 1802 PFHxS 13 Sodium 1H,1H,2H,2H-perfluoroocta De 12 M2-6:2FTS Exp1:m/z 403.00 > 84.00:Moving5PtAverage_x3 Exp1:m/z 427.00 > 407.00:Moving5PtAverage_x Exp1:m/z 429.00 > 409.00:Moving5PtAverage_x ©28-0024-672 672 ×60 <u>≻</u>20 ≻₁₆ ≻48 16 36 12 24 2.3 2.9 2.7 2.7 1.7 2.0 2.6 2.1 2.4 3.0 3.3 2.1 2.4 3.0 3.3 62 13C2-PFOA 15 Perfluorooctanoic acid 15 Perfluorooctanoic acid Exp1:m/z 415.00 > 370.00:Moving5PtAverage_x Exp1:m/z 413.00 > 369.00:Moving5PtAverage_x Exp1:m/z 413.00 > 169.00:Moving5PtAverage_> 618 600 15 630<u>-</u> 666 **∑**50 ∑₁₂ **≻**40 18 30 20 10 2.7 3.3 2.6 2.9 2.5 2.8 2.4 3.0 3.1 3.4 D 14 13C4 PFOA 16 Perfluoroheptanesulfonic Acid 17 Perfluorooctane sulfonic acid Exp1:m/z 449.00 > 80.00:Moving5PtAverage_x3 Exp1:m/z 499.00 > 80.00:Moving5PtAverage_x3 Exp1:m/z 417.00 > 372.00:Moving5PtAverage_> (X100000) 00015 X12 (56⁻ 0048-×40 24 16 0 0 2.4 2.7 3.0 3.3 2.4 2.7 3.0 3.3 2.1 2.1 3.4 0.4 Min D 19 13C5 PFNA 17 Perfluorooctane sulfonic acid 20 Perfluorononanoic acid Exp1:m/z 468.00 > 423.00:Moving5PtAverage_) Exp1:m/z 463.00 > 419.00:Moving5PtAverage_> 49



3.7

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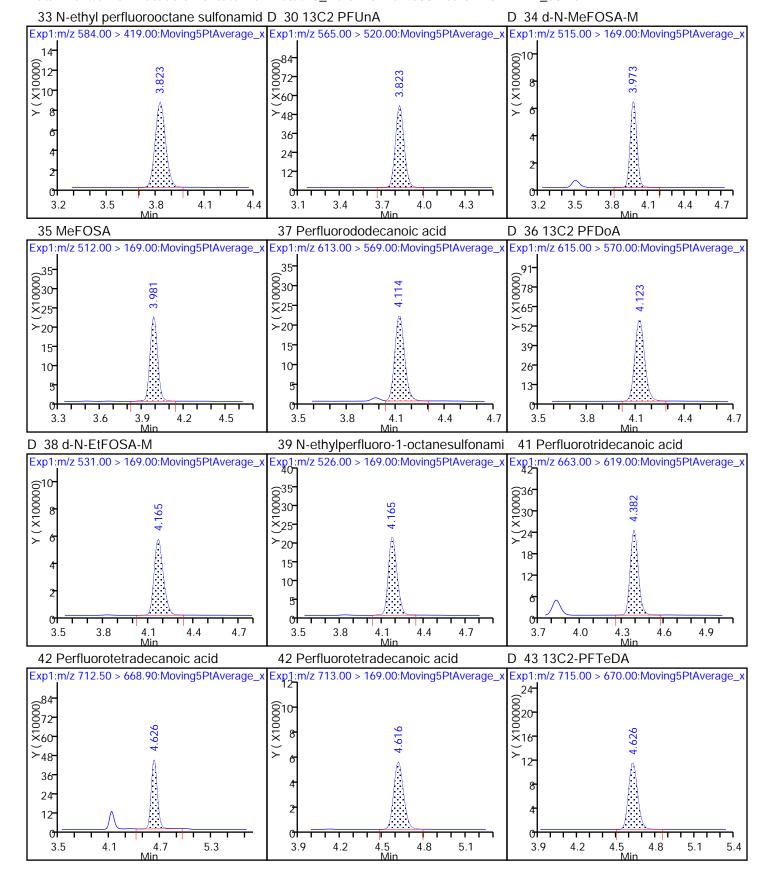
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Report Date: 25-Jul-2017 11:29:52 Chrom Revision: 2.2 26-Jun-2017 08:09:44

 $Data\ File: \verb|\ChromNa| Sacramento| ChromData A8_N \ 20170725-45831.b \ 2017.07.24AA_031.d \ 2017.07.d \ 2017.d \ 2017.d$

4.3

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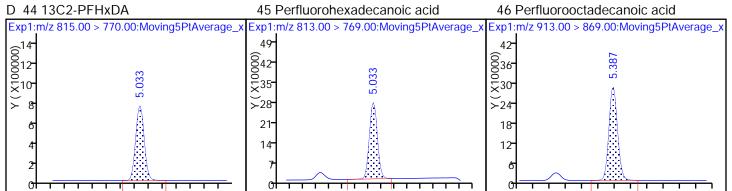
4.9

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Lab Name: TestAmerica Sacramento Job No.: 320-29732-1

SDG No.:

Lab Sample ID: CCVL 320-175762/3 Calibration Date: 07/25/2017 09:27

Instrument ID: A8_N Calib Start Date: 07/23/2017 13:10

GC Column: GeminiC18 3×100 ID: 3.00 (mm) Calib End Date: 07/23/2017 13:58

Lab File ID: 2017.07.25A_003.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanoic acid (PFBA)	AveID	0.8820	0.9681		1.10	1.00	9.8	50.0
Perfluoropentanoic acid (PFPeA)	AveID	1.042	1.119		1.07	1.00	7.4	50.0
Perfluorobutanesulfonic acid (PFBS)	AveID	1.489	1.535		0.911	0.884	3.1	50.0
Perfluorohexanoic acid (PFHxA)	AveID	0.9521	0.9504		0.998	1.00	-0.2	50.0
Perfluoroheptanoic acid (PFHpA)	AveID	1.026	1.044		1.02	1.00	1.7	50.0
Perfluorohexanesulfonic acid (PFHxS)	AveID	1.082	1.224		1.03	0.910	13.1	50.0
6:2FTS	AveID	0.8958	0.996		1.05	0.948	11.1	50.0
Perfluorooctanoic acid (PFOA)	AveID	1.067	1.128		1.06	1.00	5.7	50.0
Perfluoroheptanesulfonic Acid (PFHpS)	AveID	1.122	1.116		0.947	0.952	-0.5	50.0
Perfluorononanoic acid (PFNA)	AveID	1.018	0.9433		0.926	1.00	-7.4	50.0
Perfluorooctanesulfonic acid (PFOS)	AveID	1.057	1.044		0.916	0.928	-1.3	50.0
Perfluorooctane Sulfonamide (FOSA)	AveID	0.9018	0.8915		0.989	1.00	-1.1	50.0
8:2FTS	AveID	0.9107	0.9455		0.995	0.958	3.8	50.0
Perfluorodecanoic acid (PFDA)	AveID	0.9799	0.9836		1.00	1.00	0.4	50.0
N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA)	AveID	0.9100	0.9190		1.01	1.00	1.0	50.0
Perfluorodecanesulfonic acid (PFDS)	AveID	0.6225	0.6370		0.986	0.964	2.3	50.0
N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)	AveID	0.8488	0.8198		0.966	1.00	-3.4	50.0
Perfluoroundecanoic acid (PFUnA)	L2ID		1.091		0.958	1.00	-4.2	50.0
MeFOSA	AveID	0.9183	0.8995		0.979	1.00	-2.1	50.0
N-EtFOSA-M	AveID	0.9274	0.8837		0.953	1.00	-4.7	50.0
Perfluorododecanoic acid (PFDoA)	AveID	0.9292	0.9726		1.05	1.00	4.7	50.0
Perfluorotridecanoic Acid (PFTriA)	AveID	0.8514	0.8843		1.04	1.00	3.9	50.0
Perfluorotetradecanoic acid (PFTeA)	AveID	1.922	2.498		1.30	1.00	30.0	50.0
Perfluoro-n-hexadecanoic acid (PFHxDA)	L2ID		1.554		1.30	1.00	29.7	50.0
Perfluoro-n-octadecanoic acid (PFODA)	AveID	0.7652	0.7522		0.983	1.00	-1.7	50.0
13C4 PFBA	Ave	156025	150441		48.2	50.0	-3.6	50.0
13C5 PFPeA	Ave	110496	112401		50.9	50.0	1.7	50.0
13C2 PFHxA	Ave	101156	104323		51.6	50.0	3.1	50.0
13C4-PFHpA	Ave	83824	89432		53.3	50.0	6.7	50.0
1802 PFHxS	Ave	137438	135009		46.5	47.3	-1.8	50.0
M2-6:2FTS	Ave	47560	42852		42.8	47.5	-9.9	50.0

Lab Name: TestAmerica Sacramento Job No.: 320-29732-1

SDG No.:

Lab Sample ID: CCVL 320-175762/3 Calibration Date: 07/25/2017 09:27

Instrument ID: <u>A8_N</u> Calib Start Date: 07/23/2017 13:10

GC Column: GeminiC18 3×100 ID: 3.00 (mm) Calib End Date: 07/23/2017 13:58

Lab File ID: 2017.07.25A_003.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE CF	CF	MIN CF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
13C4 PFOA	Ave	82143	88017		53.6	50.0	7.1	50.0
13C4 PFOS	Ave	108200	108099		47.8	47.8	-0.0	50.0
13C5 PFNA	Ave	65740	72808		55.4	50.0	10.8	50.0
13C8 FOSA	Ave	182802	181464		49.6	50.0	-0.7	50.0
M2-8:2FTS	Ave	36500	34031		44.7	47.9	-6.8	50.0
13C2 PFDA	Ave	55836	63109		56.5	50.0	13.0	50.0
d3-NMeFOSAA	Ave	21732	20921		48.1	50.0	-3.7	50.0
13C2 PFUnA	Ave	40729	46713		57.3	50.0	14.7	50.0
d5-NEtFOSAA	Ave	21931	22474		51.2	50.0	2.5	50.0
d-N-MeFOSA-M	Ave	47115	44961		47.7	50.0	-4.6	50.0
d-N-EtFOSA-M	Ave	48834	45113		46.2	50.0	-7.6	50.0
13C2 PFDoA	Ave	44655	46192		51.7	50.0	3.4	50.0
13C2-PFTeDA	Ave	81216	88642		54.6	50.0	9.1	50.0
13C2-PFHxDA	Ave	41307	43303		52.4	50.0	4.8	50.0

Report Date: 25-Jul-2017 10:16:33 Chrom Revision: 2.2 26-Jun-2017 08:09:44

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170725-45833.b\2017.07.25A_003.d

Lims ID: CCVL

Client ID:

Sample Type: CCVL

Inject. Date: 25-Jul-2017 09:27:39 ALS Bottle#: 29 Worklist Smp#: 3

Injection Vol: 2.0 ul Dil. Factor: 1.0000

Sample Info: CCV L2

Misc. Info.: Plate: 1 Rack: 1

Operator ID: SACINSTLCMS01 Instrument ID: A8_N

Sublist: chrom-A8_N*sub18

Method: \ChromNa\Sacramento\ChromData\A8_N\20170725-45833.b\A8_N.m

Limit Group: LC PFC_DOD ICAL

Last Update: 25-Jul-2017 10:16:32 Calib Date: 23-Jul-2017 13:58:26

Integrator: Picker

Quant Method: Isotopic Dilution Quant By: Initial Calibration

Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20170723-45765.b\2017.07.23ICAL_010.d

Column 1: Det: EXP1

Process Host: XAWRK029

First Level Reviewer: chandrasenas Date: 25-Jul-2017 10:14:59

I II St Level Kevie	newer. Chandraserias			Date. 25-Jul-2017 10.14.59						
Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 113C4 PFBA										
217.00 > 172.00		1.554	0.009		7522046	48.2		96.4	42115	
2 Perfluorobuty	,									
212.90 > 169.00		1.554	0.009	1.000	145638	1.10		110	93.1	
D 3 13C5-PFPe		4 770	0.000		F/20027	F0.0		100	(54/0	
267.90 > 223.00		1.773	0.008		5620037	50.9		102	65169	
4 Perfluoropen 262.90 > 219.00		cia 1.773	0.018	1.000	125769	1.07		107	79.9	
D 47 13C3-PFBS		1.775	0.010	1.000	123707	1.07		107	77.7	
301.90 > 83.00		1.791	0.018		137220	NC			5233	
5 Perfluorobuta	anesulfo	nic acid								
298.90 > 80.00		1.800	0.009	1.000	183172	0.9111		103	247	
298.90 > 99.00		1.800	0.009	1.000	76796		2.39(0.00-0.00)		227	
61 Sodium 1H,		•			40574	4.05		440	2014	
327.00 > 307.00		2.006	0.022	1.000	43564	1.05		112	2914	
D 7 13C2 PFHx 315.00 > 270.00		2.052	0.022		5216172	51.6		103	48958	
6 Perfluorohex			0.022		3210172	31.0		103	40730	
313.00 > 269.00		2.052	0.022	1.000	99144	1.00		99.8	396	
10 Perfluoroher	ptanoic a	ncid								
363.00 > 319.00	2.411	2.383	0.028	1.000	93358	1.02		102	440	
D 913C4-PFHp										
367.00 > 322.00	2.411	2.383	0.028		4471608	53.3		107	27861	
8 Perfluorohex			0.000	4 000	150070	4.00		440	400	
399.00 > 80.00		2.399	0.028	1.000	150373	1.03		113	409	
D 11 18O2 PFH) 403.00 > 84.00		2.399	0.028		6385942	46.5		98.2	29850	
403.00 > 04.00	Z.4Z <i>I</i>	2.377	0.020		0300942			7U.Z	27000	

Report Date: 25-Jul-2017 10:16:33 Chrom Revision: 2.2 26-Jun-2017 08:09:44

Data File:				to\Chrom			3.b\2017.07.25A_0			
Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 12 M2-6:2FTS	5									
429.00 > 409.00		2.729	0.023		2035462	42.8		90.1	34121	
13 Sodium 1H, 427.00 > 407.00		•		e 1.000	40441	1.05		111	2179	
* 62 13C2-PFO		2.129	0.023	1.000	40441	1.05		111	2179	
415.00 > 370.00	2.781	2.750	0.031		4325537	50.0		100	28843	
15 Perfluorooc 413.00 > 369.00		2.750	0.031	1.000	99256	1.06		106	29.0	
413.00 > 169.00		2.750	0.031	1.000	54258	1.00	1.83(0.90-1.10)	100	1111	
D 14 13C4 PFO	Α									
417.00 > 372.00	2.781	2.750	0.031		4400829	53.6		107	28645	
16 Perfluorohe	•			1 000	114057	0.0472		00 F	2010	
449.00 > 80.00 D 18 13C4 PFO		2.758	0.030	1.000	114857	0.9473		99.5	3910	
503.00 > 80.00		3.132	0.035		5167131	47.8		99.9	33581	
D 19 13C5 PFN										
468.00 > 423.00	3.167	3.132	0.035		3640408	55.4		111	23492	
20 Perfluorono										
463.00 > 419.00			0.035	1.000	68677	0.9265		92.6	275	
17 Perfluorooc 499.00 > 80.00		onic acio 3.132	0.035	1.000	104706	0.9162		98.7	1714	
499.00 > 99.00		3.132	0.035	1.000	25525	0.7102	4.10(0.90-1.10)	70.7	369	
22 Perfluorooc	tane Sul	fonamide	Э							
498.00 > 78.00	3.468	3.462	0.006	1.000	161771	0.9885		98.9	3411	
D 21 13C8 FOS		2.4/2	0.007		0072107	40.7		00.3	2007/	
506.00 > 78.00		3.462	0.006	•	9073197	49.6		99.3	29076	
25 Sodium 1H, 527.00 > 507.00		3.482	0.041	1.000	30823	0.99		104	1633	
D 26 M2-8:2FTS		002	0.0		00020	0.77				
529.00 > 509.00		3.482	0.041		1630077	44.7		93.2	29075	
24 Perfluorode										
513.00 > 469.00		3.491	0.042	1.000	62072	1.00		100	385	
D 23 13C2 PFD. 515.00 > 470.00		3.491	0.042		3155429	56.5		113	10745	
D 27 d3-NMeFC		3.471	0.042		3133427	30.3		113	10743	
573.00 > 419.00		3.652	0.040		1046056	48.1		96.3	10784	
28 N-methyl pe	erfluoroo	ctane su	lfonami							
570.00 > 419.00	3.692	3.652	0.040	1.000	19226	1.01		101	832	
29 Perfluorode				1 000		0.0074		400	05/5	
599.00 > 80.00		3.808	0.035	1.000	66375	0.9864		102	2565	
D 32 d5-NEtFOS 589.00 > 419.00		3.817	0.044		1123686	51.2		102	4119	
D 30 13C2 PFU										
565.00 > 520.00		3.827	0.034		2335643	57.3		115	11296	
31 Perfluoroun 563.00 > 519.00			U U43	1.000	50947	0.0570		95.8	102	
		3.827	0.043	1.000	5U74 <i>1</i>	0.9578		70.0	103	
33 N-ethyl perf 584.00 > 419.00		3.827	0.043	1.002	Page 8423 of 1	10.0.9658		96.6	617	
					raye 843 0f 1	104				

Report Date: 25-Jul-2017 10:16:33 Chrom Revision: 2.2 26-Jun-2017 08:09:44 \\ChromNa\Sacramento\ChromData\A8_N\20170725-45833 b\2017 07 25A_003 d

Data File:	\\Chrc	mNa\Sa	crament	o\Chrom	Data\A8_N\201	70725-4583	3.b\2017.07.25A_0	03.d		
Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 34 d-N-MeFOS	SA-M									
515.00 > 169.00		3.942	0.008		2248052	47.7		95.4	766	
35 MeFOSA										
512.00 > 169.00	3.957	3.950	0.007	1.000	40442	0.9795		97.9	1346	
D 36 13C2 PFDc	nΑ									
615.00 > 570.00		4.123	0.042		2309594	51.7		103	4950	
37 Perfluorodoo										
613.00 > 569.00		4.123	0.050	1.000	44928	1.05		105	14.0	
D 38 d-N-EtFOS	A-M									
531.00 > 169.00		4.132	0.007		2255658	46.2		92.4	5339	
39 N-ethylperflu	uoro-1-o	ctanesul	fonami							
526.00 > 169.00		4.140	0.008	1.000	39865	0.9529		95.3	1611	
41 Perfluorotrid	lecanoic	acid								
663.00 > 619.00	4.447	4.393	0.054	1.000	40848	1.04		104	16.3	
D 43 13C2-PFT6	eDA									
715.00 > 670.00	4.688	4.642	0.046		4432117	54.6		109	20666	
42 Perfluorotetr	radecan	oic acid								
712.50 > 668.90	4.688	4.642	0.046	1.000	115379	1.30		130	9.4	
713.00 > 169.00	4.688	4.642	0.046	1.000	13169		8.76(0.00-0.00)		311	
D 44 13C2-PFH	xDA									
815.00 > 770.00	5.120	5.065	0.055		2165133	52.4		105	6172	
45 Perfluorohex	xadecan	oic acid								
813.00 > 769.00	5.128	5.065	0.063	1.000	71783	1.30		130	11.3	
46 Perfluorooct	adecano	oic acid								
913.00 > 869.00	5.511	5.437	0.074	1.000	34744	0.9830		98.3	21.2	
00.51										

OC Flag Legend Processing Flags

NC - Not Calibrated

Reagents:

LCPFC_FULL-L2_00004 Amount Added: 1.00 Units: mL

Report Date: 25-Jul-2017 10:16:33 Chrom Revision: 2.2 26-Jun-2017 08:09:44 TestAmerica Sacramento Data File: \ChromNa\Sacramento\ChromData\A8_N\20170725-45833.b\2017.07.25A_003.d **Injection Date:** 25-Jul-2017 09:27:39 Instrument ID: A8_N Lims ID: **CCVL** Client ID: Operator ID: SACINSTLCMS01 ALS Bottle#: 29 Worklist Smp#: 3 Injection Vol: 2.0 ul Dil. Factor: 1.0000 Method: Limit Group: LC PFC_DOD ICAL $A8_N$ D 113C4 PFBA 2 Perfluorobutyric acid D 313C5-PFPeA Exp1:m/z 217.00 > 172.00:Moving5PtAverage_x Exp1:m/z 212.90 > 169.00:Moving5PtAverage_x Exp1:m/z 267.90 > 223.00:Moving5PtAverage_x 70 ©35-030-(00024 00001x) 660 ×50 $\stackrel{\smile}{\times}_{25}$ >40 **≻**20 30 15 20 10 10 1.2 1.5 1.2 1.8 1.8 2.1 2.1 1.4 2.0 2.3 5 Perfluorobutanesulfonic acid 5 Perfluorobutanesulfonic acid 4 Perfluoropentanoic acid Exp1:m/z 262.90 > 219.00:Moving5PtAverage_x Exp1:m/z 298.90 > 80.00:Moving5PtAverage_x3 Exp1:m/z 298.90 > 99.00:Moving5PtAverage x3 63 35 84 (054 1000 145 630 ×25 672-260-260->36 -48 27 36 15 18 24 10 12 1.8 1.5 1.8 2.1 1.5 2.1 2.4 2.0 2.3 1.2 1.4 1.7 1.1 61 Sodium 1H,1H,2H,2H-perfluorohexable 7 13C2 PFHxA 6 Perfluorohexanoic acid Exp1:m/z 315.00 > 270.00:Moving5PtAverage_x Exp1:m/z 327.00 > 307.00:Moving5PtAverage_x Exp1:m/z 313.00 > 269.00:Moving5PtAverage_x 21 42 ©21**-**0218-018 0015 X 12 €36 €36 €36 ∑₁₅-⁻24 18 12 1.5 1.8 2.1 2.4 1.8 2.1 2.4 2.7 1.8 2.1 2.7 1.5 1.5 2.4 2.7 1.2 1.2 10 Perfluoroheptanoic acid D 9 13C4-PFHpA 8 Perfluorohexanesulfonic acid Exp1:m/z 363.00 > 319.00:Moving5PtAverage_> Exp1:m/z 367.00 > 322.00:Moving5PtAverage_x Exp1:m/z 399.00 > 80.00:Moving5PtAverage_x3 56 000015-X (0001× ×)24 (0048 (000 (40-(40-_32 18 24 12 16 00| 02.9 1.8 2.1 2.4 2.7 3.0 1.7 2.9 2.0 2.3 2.6 2.0 Page 845 rof 1104 1.7

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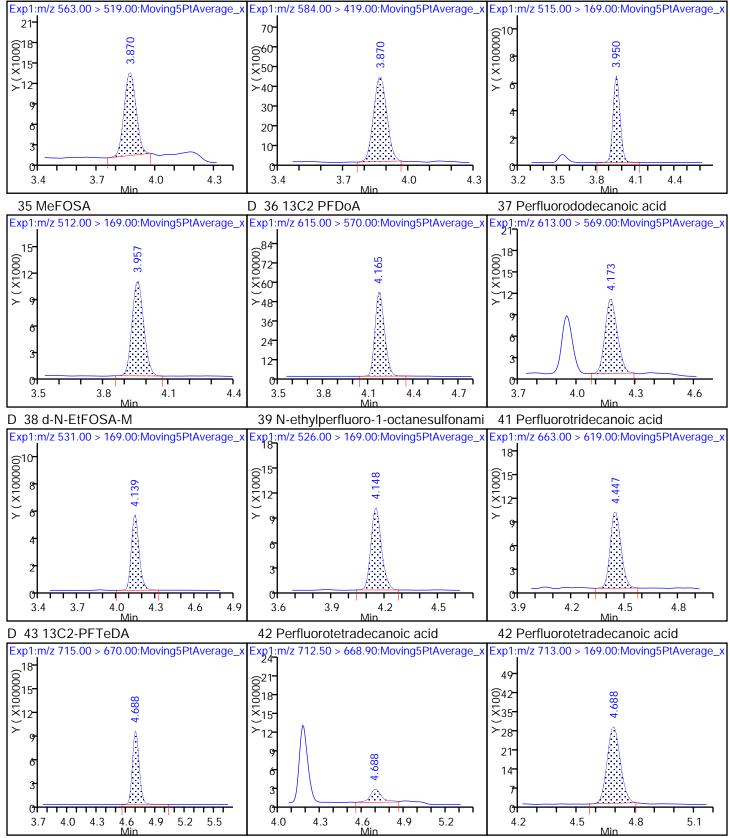
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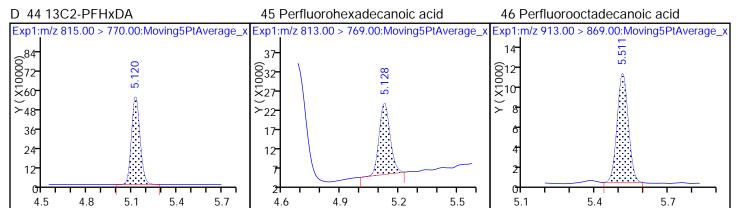
Chrom Revision: 2.2 26-Jun-2017 08:09:44

Report Date: 25-Jul-2017 10:16:33



Report Date: 25-Jul-2017 10:16:33 Chrom Revision: 2.2 26-Jun-2017 08:09:44

Data File: \ChromNa\Sacramento\ChromData\A8_N\20170725-45833.b\2017.07.25A_003.d



Lab Name: TestAmerica Sacramento Job No.: 320-29732-1

SDG No.:

Lab Sample ID: CCV 320-175951/1 Calibration Date: 07/25/2017 14:10

Instrument ID: A8_N Calib Start Date: 07/23/2017 13:10

GC Column: GeminiC18 3×100 ID: 3.00 (mm) Calib End Date: 07/23/2017 13:58

Lab File ID: 2017.07.25B_001.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanoic acid (PFBA)	AveID	0.8820	1.032		23.4	20.0	17.0	25.0
Perfluoropentanoic acid (PFPeA)	AveID	1.042	1.052		20.2	20.0	1.0	25.0
Perfluorobutanesulfonic acid (PFBS)	AveID	1.489	1.537		18.2	17.7	3.2	25.0
Perfluorohexanoic acid (PFHxA)	AveID	0.9521	0.9547		20.1	20.0	0.3	25.0
Perfluoroheptanoic acid (PFHpA)	AveID	1.026	1.005		19.6	20.0	-2.1	25.0
Perfluorohexanesulfonic acid (PFHxS)	AveID	1.082	1.021		17.2	18.2	-5.6	25.0
6:2FTS	AveID	0.8958	0.8787		18.6	19.0	-1.9	25.0
Perfluorooctanoic acid (PFOA)	AveID	1.067	1.024		19.2	20.0	-4.0	25.0
Perfluoroheptanesulfonic Acid (PFHpS)	AveID	1.122	1.189		20.2	19.0	6.0	25.0
Perfluorononanoic acid (PFNA)	AveID	1.018	0.9903		19.5	20.0	-2.7	25.0
Perfluorooctanesulfonic acid (PFOS)	AveID	1.057	1.070		18.8	18.6	1.2	25.0
8:2FTS	AveID	0.9107	0.9275		19.5	19.2	1.9	25.0
Perfluorooctane Sulfonamide (FOSA)	AveID	0.9018	0.9007		20.0	20.0	-0.1	25.0
Perfluorodecanoic acid (PFDA)	AveID	0.9799	0.9232		18.8	20.0	-5.8	25.0
N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA)	AveID	0.9100	0.8955		19.7	20.0	-1.6	25.0
Perfluorodecanesulfonic acid (PFDS)	AveID	0.6225	0.6495		20.1	19.3	4.3	25.0
N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)	AveID	0.8488	0.8798		20.7	20.0	3.7	25.0
Perfluoroundecanoic acid (PFUnA)	L2ID		1.027		19.9	20.0	-0.4	25.0
MeFOSA	AveID	0.9183	0.9266		20.2	20.0	0.9	25.0
Perfluorododecanoic acid (PFDoA)	AveID	0.9292	0.9665		20.8	20.0	4.0	25.0
N-EtFOSA-M	AveID	0.9274	0.9108		19.6	20.0	-1.8	25.0
Perfluorotridecanoic Acid (PFTriA)	AveID	0.8514	0.8304		19.5	20.0	-2.5	25.0
Perfluorotetradecanoic acid (PFTeA)	AveID	1.922	2.048		21.3	20.0	6.6	25.0
Perfluoro-n-hexadecanoic acid (PFHxDA)	L2ID		0.9091		22.3	20.0	11.5	25.0
Perfluoro-n-octadecanoic acid (PFODA)	AveID	0.7652	0.8119		21.2	20.0	6.1	25.0
13C4 PFBA	Ave	156025	160885		51.6	50.0	3.1	50.0
13C5 PFPeA	Ave	110496	115508		52.3	50.0	4.5	50.0
13C2 PFHxA	Ave	101156	110279		54.5	50.0	9.0	50.0
13C4-PFHpA	Ave	83824	97166		58.0	50.0	15.9	50.0
1802 PFHxS	Ave	137438	149216		51.4	47.3	8.6	50.0
M2-6:2FTS	Ave	47560	45868		45.8	47.5	-3.6	50.0

Lab Name: TestAmerica Sacramento Job No.: 320-29732-1

SDG No.:

Lab Sample ID: <u>CCV 320-175951/1</u> Calibration Date: <u>07/25/2017 14:10</u>

Instrument ID: <u>A8_N</u> Calib Start Date: 07/23/2017 13:10

GC Column: GeminiC18 3×100 ID: 3.00 (mm) Calib End Date: 07/23/2017 13:58

Lab File ID: 2017.07.25B_001.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE CF	CF	MIN CF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
13C4 PFOA	Ave	82143	91461		55.7	50.0	11.3	50.0
13C4 PFOS	Ave	108200	108341		47.9	47.8	0.1	50.0
13C5 PFNA	Ave	65740	71588		54.4	50.0	8.9	50.0
M2-8:2FTS	Ave	36500	34518		45.3	47.9	-5.4	50.0
13C8 FOSA	Ave	182802	184132		50.4	50.0	0.7	50.0
13C2 PFDA	Ave	55836	61094		54.7	50.0	9.4	50.0
d3-NMeFOSAA	Ave	21732	21835		50.2	50.0	0.5	50.0
13C2 PFUnA	Ave	40729	45084		55.3	50.0	10.7	50.0
d5-NEtFOSAA	Ave	21931	22089		50.4	50.0	0.7	50.0
d-N-MeFOSA-M	Ave	47115	45309		48.1	50.0	-3.8	50.0
13C2 PFDoA	Ave	44655	44365		49.7	50.0	-0.6	50.0
d-N-EtFOSA-M	Ave	48834	46316		47.4	50.0	-5.2	50.0
13C2-PFTeDA	Ave	81216	87004		53.6	50.0	7.1	50.0
13C2-PFHxDA	Ave	41307	44771		54.2	50.0	8.4	50.0

Report Date: 26-Jul-2017 11:32:36 Chrom Revision: 2.2 26-Jun-2017 08:09:44

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170726-45877.b\2017.07.25B_001.d

Lims ID: CCV L4

Client ID:

Sample Type: CCV

Inject. Date: 25-Jul-2017 14:10:47 ALS Bottle#: 31 Worklist Smp#: 1

Injection Vol: 2.0 ul Dil. Factor: 1.0000

Sample Info: CCV L4

Misc. Info.: Plate: 1 Rack: 1

Operator ID: SACINSTLCMS01 Instrument ID: A8_N

Sublist: chrom-A8_N*sub18

Method: \ChromNa\Sacramento\ChromData\A8_N\20170726-45877.b\A8_N.m

Limit Group: LC PFC_DOD ICAL

Last Update: 26-Jul-2017 11:32:34 Calib Date: 23-Jul-2017 13:58:26

Integrator: Picker

Quant Method: Isotopic Dilution Quant By: Initial Calibration

Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20170723-45765.b\2017.07.23ICAL_010.d

Column 1: Det: EXP1

Process Host: XAWRK028

Process Host:	Process Host: XAWRK028										
Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags	
D 113C4 PFBA 217.00 > 172.00		1.559	-0.012		8044257	51.6		103	28574		
2 Perfluorobut 212.90 > 169.00	•	1.559	-0.012	1.000	3321390	23.4		117	1693		
D 3 13C5-PFP6 267.90 > 223.00	1.757		-0.021		5775398	52.3		105	48022		
4 Perfluoroper 262.90 > 219.00	1.757	cid 1.778	-0.021	1.000	2430970	20.2		101	1266		
D 47 13C3-PFB 301.90 > 83.00	1.784	1.797	-0.013		149732	NC			5825		
5 Perfluorobut 298.90 > 80.00 298.90 > 99.00	1.784	1.806	-0.022 -0.022	1.000 1.000	4053523 1584492	18.2	2.56(0.00-0.00)	103	2524 2371		
61 Sodium 1H, 327.00 > 307.00	1.998	H-perflue 2.013		ne 1.000	807461	18.1		97.0	31823		
D 7 13C2 PFHx 315.00 > 270.00	2.032		-0.026		5513972	54.5		109	31525		
6 Perfluorohex 313.00 > 269.00 D 9 13C4-PFHp	2.032		-0.026	1.000	2105733	20.1		100	5117		
367.00 > 322.00 10 Perfluorohe	2.363		-0.030		4858314	58.0		116	25493		
363.00 > 319.00 D 11 1802 PFH.	2.363	2.393	-0.030	1.000	1952106	19.6		97.9	7649		
403.00 > 84.00 8 Perfluorohex	2.380	2.409 onic acid			7057915	51.4		109	24943		
399.00 > 80.00 D 12 M2-6:2FTS		2.409	-0.029	1.000	2772736	17.2		94.4	2346		
429.00 > 409.00	2.700	2.727	-0.027		2178738 Page 852 of 1	45.8 104		96.4	29414		

Report Date: 26-Jul-2017 11:32:36 Chrom Revision: 2.2 26-Jun-2017 08:09:44 Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170726-45877.b\2017.07.25B_001.d **FXP REL** DI T Amount Signal **RT** RT **RT** Response ng/ml Ratio(Limits) %Rec S/N Flags RT 13 Sodium 1H,1H,2H,2H-perfluorooctane 427.00 > 407.00 2.700 2.734 -0.034 1.000 18.6 98.1 18751 764177 D 14 13C4 PFOA 417.00 > 372.00 2.729 2.756 -0.027 4573055 55.7 25168 111 * 62 13C2-PFOA 415.00 > 370.00 2.722 2.756 -0.034 4479144 50.0 100 25759 15 Perfluorooctanoic acid 413.00 > 369.00 2.729 2.756 -0.027 19.2 96.0 402 1.000 1873611

1073308

2452485

2151402

453284

3579400

5178708

1417797

9206615

1653392

613420

3054698

3317010

1128054

1091736

391065

1356724

1104449

925976

388680

2254207

Page 853 of 1104 48.1

1.75(0.90-1.10)

4.75(0.90-1.10)

20.2

18.8

54.4

47.9

19.5

50.4

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2967

16383

18851

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15233

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8433

9959

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5805

5118

8703

2679

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100

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101

94.6

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109

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100

98.4

104

101

99.6

104

111

96.2

413.00 > 169.00 2.729

449.00 > 80.00 2.737

499.00 > 80.00 3.107

499.00 > 99.00 3.098

20 Perfluorononanoic acid 463.00 > 419.00 3.107 3.

D 19 13C5 PFNA 468.00 > 423.00 3.107

D 18 13C4 PFOS 503.00 > 80.00 3.098

D 21 13C8 FOSA

D 26 M2-8:2FTS

D 23 13C2 PFDA 515.00 > 470.00 3.464

506.00 > 78.00 3.455

529.00 > 509.00 3.446

527.00 > 507.00 3.455

498.00 > 78.00 3.455

D 27 d3-NMeFOSAA 573.00 > 419.00 3.622

570.00 > 419.00 3.622

599.00 > 80.00 3.778

563.00 > 519.00 3.798

584.00 > 419.00 3.788

D 30 13C2 PFUnA 565.00 > 520.00 3.788

D 34 d-N-MeFOSA-M 515.00 > 169.00 3.951

D 32 d5-NEtFOSAA 589.00 > 419.00 3.788

24 Perfluorodecanoic acid 513.00 > 469.00 3.464 3.

16 Perfluoroheptanesulfonic Acid

17 Perfluorooctane sulfonic acid

2.756 -0.027

2.763 -0.026

3.131 -0.033

3.140 -0.033

3.487 -0.032

3.487 -0.041

3.487 -0.032

3.497 -0.033

3.497 -0.042

3.497 -0.033

3.646 -0.024

3.657 -0.035

3.803 -0.025

3.822 -0.034

3.822 -0.024

3.822 -0.034

3.822 -0.034

3.979 -0.028

25 Sodium 1H,1H,2H,2H-perfluorodecane

22 Perfluorooctane Sulfonamide

28 N-methyl perfluorooctane sulfonami

33 N-ethyl perfluorooctane sulfonamid

29 Perfluorodecane Sulfonic acid

31 Perfluoroundecanoic acid

-0.024

-0.024

-0.033

3.131

3.131

3.131

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Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20170726-45877.b\2017.07.25B_001.d									
Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
35 MeFOSA										
512.00 > 169.00	3.951	3.987	-0.036	1.000	839633	20.2		101	4984	
37 Perfluorodoo	decanoio	acid								
613.00 > 569.00	4.087	4.116	-0.029	1.000	857552	20.8		104	926	
D 36 13C2 PFDo	ρA									
615.00 > 570.00	4.087	4.116	-0.029		2218241	49.7		99.4	4411	
D 38 d-N-EtFOS										
531.00 > 169.00	4.138	4.167	-0.029		2315782	47.4		94.8	5134	
39 N-ethylperflu										
526.00 > 169.00	4.146	4.175	-0.029	1.000	843711	19.6		98.2	4977	
41 Perfluorotrid										
663.00 > 619.00			-0.024	1.000	736797	19.5		97.5	276	
42 Perfluorotetr			0.001	1 000	1017104	24.2		107	107	
712.50 > 668.90 713.00 > 169.00		4.614 4.614	-0.021 -0.032	1.000 0.998	1817134 218009	21.3	8.34(0.00-0.00)	107	137 2960	
D 43 13C2-PFTe		4.014	-0.032	0.770	210007		0.34(0.00-0.00)		2700	
715.00 > 670.00		4.614	-0.021		4350200	53.6		107	25329	
45 Perfluorohex			0.021		1000200	00.0		107	20027	
813.00 > 769.00			-0.014	1.000	806644	22.3		112	118	
D 44 13C2-PFHx		0.020	0.0		0000					
815.00 > 770.00		5.025	-0.014		2238556	54.2		108	3516	
46 Perfluoroocta										
913.00 > 869.00		5.383	-0.019	1.000	720420	21.2		106	358	
OC Floor Low	ond									
QC Flag Leg	ena									

OC Flag Legend Processing Flags

NC - Not Calibrated

Reagents:

LCPFC_FULL-L4_00005 Amount Added: 1.00 Units: mL

Report Date: 26-Jul-2017 11:32:36 Chrom Revision: 2.2 26-Jun-2017 08:09:44 TestAmerica Sacramento Data File: \ChromNa\Sacramento\ChromData\A8_N\20170726-45877.b\2017.07.25B_001.d **Injection Date:** 25-Jul-2017 14:10:47 Instrument ID: A8_N Lims ID: CCV L4 Client ID: Operator ID: SACINSTLCMS01 ALS Bottle#: 31 Worklist Smp#: 2.0 ul Dil. Factor: 1.0000 Injection Vol: Limit Group: LC PFC_DOD ICAL Method: $A8_N$ 2 Perfluorobutyric acid D 113C4 PFBA D 313C5-PFPeA Exp1:m/z 217.00 > 172.00:Moving5PtAverage_x Exp1:m/z 212.90 > 169.00:Moving5PtAverage_x Exp1:m/z 267.90 > 223.00:Moving5PtAverage_x (015 000012 X 7 ©35-030-©28 0024 $\stackrel{\smile}{\times}_{25}$ ≻16⁻ 15 10 2.2 1.9 1.1 1.4 1.7 2.0 0.4 1.0 1.6 1.0 1.3 2.2 2.5 1.6 5 Perfluorobutanesulfonic acid 4 Perfluoropentanoic acid 5 Perfluorobutanesulfonic acid Exp1:m/z 298.90 > 80.00:Moving5PtAverage_x3 Exp1:m/z 262.90 > 219.00:Moving5PtAverage_x Exp1:m/z 298.90 > 99.00:Moving5PtAverage_x3 (12¹ (0000010¹ (12¹ (12 (0018 000015 ×)12 ≻ (70-(060-∑50 30 20 10 2.3 1.4 2.0 1.2 1.5 1.8 2.4 1.5 1.8 1.1 1.7 2.1 1.2 2.1 2.4 61 Sodium 1H,1H,2H,2H-perfluorohexaDe 7 13C2 PFHxA 6 Perfluorohexanoic acid Exp1:m/z 327.00 > 307.00:Moving5PtAverage_x Exp1:m/z 315.00 > 270.00:Moving5PtAverage_x Exp1:m/z 313.00 > 269.00:Moving5PtAverage_x 91 35 (24⁻ 0020 0030 25 0078 0078 ×65 ∑₁₆-≻20 **≻**52 12 15 39 10 26 13 2.0 2.6 1.5 1.8 2.1 1.8 2.1 1.4 1.7 2.3 2.4 2.7 1.5 2.4 2.7 1.2 9 13C4-PFHpA 10 Perfluoroheptanoic acid D 11 1802 PFHxS Exp1:m/z 363.00 > 319.00:Moving5PtAverage_x Exp1:m/z 367.00 > 322.00:Moving5PtAverage_> Exp1:m/z 403.00 > 84.00:Moving5PtAverage_x3 21 630 00 025 (000001X) ⁷⁷ 866 ×55 ≻₄₄ 15 33 10 22 11 0 0 2.9 2.0 2.3 2.6 2.0 2.3 2.6 2.9 1.7 1.7

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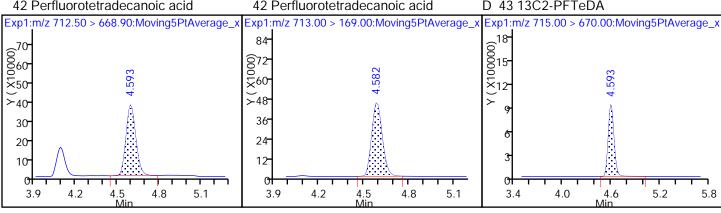
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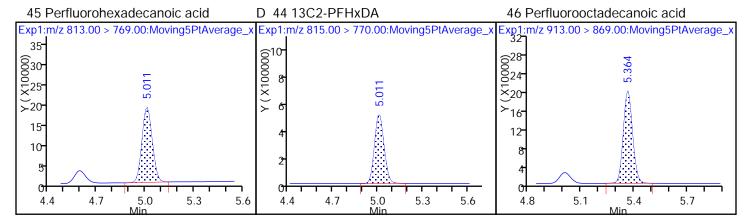
Chrom Revision: 2.2 26-Jun-2017 08:09:44

Report Date: 26-Jul-2017 11:32:36



Report Date: 26-Jul-2017 11:32:36 Chrom Revision: 2.2 26-Jun-2017 08:09:44

Data File: \ChromNa\Sacramento\ChromData\A8_N\20170726-45877.b\2017.07.25B_001.d



Lab Name: TestAmerica Sacramento Job No.: 320-29732-1

SDG No.:

Lab Sample ID: CCV 320-175951/12 Calibration Date: 07/25/2017 15:26

Instrument ID: A8_N Calib Start Date: 07/23/2017 13:10

GC Column: GeminiC18 3×100 ID: 3.00 (mm) Calib End Date: 07/23/2017 13:58

Lab File ID: 2017.07.25B_012.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanoic acid (PFBA)	AveID	0.8820	0.9454		53.6	50.0	7.2	25.0
Perfluoropentanoic acid (PFPeA)	AveID	1.042	1.023		49.1	50.0	-1.9	25.0
Perfluorobutanesulfonic acid (PFBS)	AveID	1.489	1.488		44.2	44.2	-0.0	25.0
Perfluorohexanoic acid (PFHxA)	AveID	0.9521	0.8958		47.0	50.0	-5.9	25.0
Perfluoroheptanoic acid (PFHpA)	AveID	1.026	0.9784		47.7	50.0	-4.7	25.0
Perfluorohexanesulfonic acid (PFHxS)	AveID	1.082	1.006		42.3	45.5	-7.1	25.0
6:2FTS	AveID	0.8958	0.8577		45.4	47.4	-4.3	25.0
Perfluorooctanoic acid (PFOA)	AveID	1.067	1.011		47.4	50.0	-5.2	25.0
Perfluoroheptanesulfonic Acid (PFHpS)	AveID	1.122	1.165		49.5	47.6	3.9	25.0
Perfluorooctanesulfonic acid (PFOS)	AveID	1.057	1.032		45.3	46.4	-2.4	25.0
Perfluorononanoic acid (PFNA)	AveID	1.018	0.9003		44.2	50.0	-11.6	25.0
8:2FTS	AveID	0.9107	0.8913		46.9	47.9	-2.1	25.0
Perfluorodecanoic acid (PFDA)	AveID	0.9799	0.9503		48.5	50.0	-3.0	25.0
Perfluorooctane Sulfonamide (FOSA)	AveID	0.9018	0.9013		50.0	50.0	-0.0	25.0
N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA)	AveID	0.9100	0.9250		50.8	50.0	1.7	25.0
Perfluorodecanesulfonic acid (PFDS)	AveID	0.6225	0.6416		49.7	48.2	3.1	25.0
N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)	AveID	0.8488	0.8372		49.3	50.0	-1.4	25.0
Perfluoroundecanoic acid (PFUnA)	L2ID		1.009		49.1	50.0	-1.8	25.0
MeFOSA	AveID	0.9183	0.8728		47.5	50.0	-5.0	25.0
Perfluorododecanoic acid (PFDoA)	AveID	0.9292	0.8897		47.9	50.0	-4.2	25.0
N-EtFOSA-M	AveID	0.9274	0.9226		49.7	50.0	-0.5	25.0
Perfluorotridecanoic Acid (PFTriA)	AveID	0.8514	0.8932		52.5	50.0	4.9	25.0
Perfluorotetradecanoic acid (PFTeA)	AveID	1.922	2.028		52.8	50.0	5.5	25.0
Perfluoro-n-hexadecanoic acid (PFHxDA)	L2ID		0.8189		51.1	50.0	2.1	25.0
Perfluoro-n-octadecanoic acid (PFODA)	AveID	0.7652	0.8205		53.6	50.0	7.2	25.0
13C4 PFBA	Ave	156025	157364		50.4	50.0	0.9	50.0
13C5 PFPeA	Ave	110496	114276		51.7	50.0	3.4	50.0
13C2 PFHxA	Ave	101156	112682		55.7	50.0	11.4	50.0
13C4-PFHpA	Ave	83824	94165		56.2	50.0	12.3	50.0
1802 PFHxS	Ave	137438	148491		51.1	47.3	8.0	50.0
M2-6:2FTS	Ave	47560	45465		45.4	47.5	-4.4	50.0

Lab Name: TestAmerica Sacramento Job No.: 320-29732-1

SDG No.:

Lab Sample ID: CCV 320-175951/12 Calibration Date: 07/25/2017 15:26

Instrument ID: A8_N Calib Start Date: 07/23/2017 13:10

GC Column: GeminiC18 3×100 ID: 3.00 (mm) Calib End Date: 07/23/2017 13:58

Lab File ID: 2017.07.25B_012.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE CF	CF	MIN CF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
13C4 PFOA	Ave	82143	89959		54.8	50.0	9.5	50.0
13C4 PFOS	Ave	108200	108150		47.8	47.8	-0.0	50.0
13C5 PFNA	Ave	65740	71522		54.4	50.0	8.8	50.0
13C8 FOSA	Ave	182802	175839		48.1	50.0	-3.8	50.0
M2-8:2FTS	Ave	36500	33302		43.7	47.9	-8.8	50.0
13C2 PFDA	Ave	55836	58717		52.6	50.0	5.2	50.0
d3-NMeFOSAA	Ave	21732	22198		51.1	50.0	2.1	50.0
13C2 PFUnA	Ave	40729	41652		51.1	50.0	2.3	50.0
d5-NEtFOSAA	Ave	21931	22002		50.2	50.0	0.3	50.0
d-N-MeFOSA-M	Ave	47115	47250		50.1	50.0	0.3	50.0
13C2 PFDoA	Ave	44655	42658		47.8	50.0	-4.5	50.0
d-N-EtFOSA-M	Ave	48834	49222		50.4	50.0	0.8	50.0
13C2-PFTeDA	Ave	81216	82053		50.5	50.0	1.0	50.0
13C2-PFHxDA	Ave	41307	43236		52.3	50.0	4.7	50.0

Report Date: 26-Jul-2017 11:33:09 Chrom Revision: 2.2 26-Jun-2017 08:09:44

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170726-45877.b\2017.07.25B_012.d

Lims ID: CCV L5

Client ID:

Sample Type: CCV

Inject. Date: 25-Jul-2017 15:26:41 ALS Bottle#: 32 Worklist Smp#: 12

Injection Vol: 2.0 ul Dil. Factor: 1.0000

Sample Info: CCV L5

Misc. Info.: Plate: 1 Rack: 1

Operator ID: SACINSTLCMS01 Instrument ID: A8_N

Sublist: chrom-A8_N*sub18

Method: \ChromNa\Sacramento\ChromData\A8_N\20170726-45877.b\A8_N.m

Limit Group: LC PFC_DOD ICAL

Last Update: 26-Jul-2017 11:33:09 Calib Date: 23-Jul-2017 13:58:26

Integrator: Picker

Quant Method: Isotopic Dilution Quant By: Initial Calibration

Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20170723-45765.b\2017.07.23ICAL_010.d

Column 1: Det: EXP1

Process Host: XAWRK028

First Level Reviewer: chandrasenas Date: 26-Jul-2017 11:31:25

First Level Reviewer, Chandrasenas					Date.		20-Jul-2017 11.31.23	,		
Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 113C4 PFBA	4									
217.00 > 172.00		1.559	0.0		7868207	50.4		101	26810	
2 Perfluorobut										
212.90 > 169.00	1.559	1.559	0.0	1.000	7438568	53.6		107	4145	
D 3 13C5-PFP6										
267.90 > 223.00		1.778	0.0		5713819	51.7		103	38423	
4 Perfluoroper 262.90 > 219.00		cid 1.778	0.0	1.000	5843746	49.1		98.1	3346	
D 47 13C3-PFB		1.770	0.0	1.000	3043740	49.1		90.1	3340	
301.90 > 83.00		1.797	0.0		149010	NC			8564	
5 Perfluorobut					, , ,					
298.90 > 80.00		1.806	0.0	1.000	9769293	44.2		100.0	5460	
298.90 > 99.00	1.806	1.806	0.0	1.000	3911077		2.50(0.00-0.00)		5267	
61 Sodium 1H,		•								
327.00 > 307.00		2.013	0.0	1.000	1974837	44.7		95.8	65963	
D 7 13C2 PFHx										
315.00 > 270.00		2.058	0.0		5634111	55.7		111	34837	
6 Perfluorohex			0.0	1.000	E044044	47.0		04.1	10010	
313.00 > 269.00		2.058	0.0	1.000	5046944	47.0		94.1	10818	
D 9 13C4-PFH _k 367.00 > 322.00		2.393	0.0		4708274	56.2		112	22522	
10 Perfluorohe			0.0		1700271	00.2		112	22022	
363.00 > 319.00	•	2.393	0.0	1.000	4606351	47.7		95.3	9657	
D 11 1802 PFH	xS									
403.00 > 84.00	2.409	2.409	0.0		7023621	51.1		108	28736	
8 Perfluorohex	kanesulfo	onic acid	I							
399.00 > 80.00	2.409	2.409	0.0	1.000	6793674	42.3		92.9	4986	
					Dama 000 of 4	1404				

Report Date: 26-Jul-2017 11:33:09 Chrom Revision: 2.2 26-Jun-2017 08:09:44

Data File:	· ·										
Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags	
D 12 M2-6:2FTS	5										
429.00 > 409.00	2.727	2.727		_	2159567	45.4		95.6	30402		
13 Sodium 1H, 427.00 > 407.00		•		e 1.000	1848328	45.4		95.7	27501		
D 14 13C4 PFO											
417.00 > 372.00 * 62 13C2-PFO		2.756	0.0		4497966	54.8		110	25047		
415.00 > 370.00	2.756	2.756	0.0		4356983	50.0		100	27292		
15 Perfluorooc 413.00 > 369.00			0.0	1 000	4E 44 400	47.4		04.0	958		
413.00 > 369.00		2.756 2.756		1.000 1.000	4546482 2525155	47.4	1.80(0.90-1.10)	94.8	9031		
16 Perfluorohe							,				
449.00 > 80.00	•	2.763		1.000	5998429	49.5		104	25299		
17 Perfluorooc											
499.00 > 80.00		3.131	0.0	1.000	5177689	45.3	4 52/0 00 1 10)	97.6	6526		
499.00 > 99.00 D 19 13C5 PFN		3.131	0.0	1.000	1143780		4.53(0.90-1.10)		29102		
468.00 > 423.00		3.131	0.0		3576081	54.4		109	14839		
D 18 13C4 PFO											
503.00 > 80.00 20 Perfluorono		3.131	0.0		5169548	47.8		100.0	19498		
463.00 > 419.00		3.140	0.0	1.000	3219357	44.2		88.4	6877		
D 21 13C8 FOS		2 407	0.0		0701057	40.1		0/ 2	11710		
506.00 > 78.00 D 26 M2-8:2FTS		3.487	0.0		8791957	48.1		96.2	11712		
529.00 > 509.00	3.487	3.487			1595164	43.7		91.2	14780		
25 Sodium 1H,		•			4.404.74.0	47.0		07.0	4.4400		
527.00 > 507.00		3.487	0.0	1.000	1421712	46.9		97.9	14409		
D 23 13C2 PFD 515.00 > 470.00		3.497	0.0		2935874	52.6		105	8362		
22 Perfluorooc		fonamid	е								
498.00 > 78.00		3.497	0.0	1.000	7924168	50.0		99.9	11132		
24 Perfluorode 513.00 > 469.00		3.497	0.0	1.000	2789985	48.5		97.0	7721		
D 27 d3-NMeFC											
573.00 > 419.00 28 N-methyl pe		3.646			1109894	51.1		102	7041		
570.00 > 419.00				1.003	1026632	50.8		102	11836		
29 Perfluorode				1.000	2244400	40.7		102	0254		
599.00 > 80.00 D 32 d5-NEtFO		3.803	0.0	1.000	3344408	49.7		103	9254		
589.00 > 419.00		3.822	0.0		1100097	50.2		100	2591		
31 Perfluoroun 563.00 > 519.00		acid 3.822	0.0	1.000	2101802	49.1		98.2	3782		
33 N-ethyl perf											
584.00 > 419.00 D 30 13C2 PFU		3.822	0.0	1.000	920963	49.3		98.6	7547		
565.00 > 520.00		3.822	0.0		Page 863 of 1	104 ^{51.1}		102	8412		
					U						

Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20170726-45877.b\2017.07.25B_012.d										
Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags	
D 34 d-N-MeFOS	SA-M										
515.00 > 169.00		3.979	0.0		2362511	50.1		100	815		
35 MeFOSA											
512.00 > 169.00	3.987	3.987	0.0	1.000	2061990	47.5		95.0	5044		
37 Perfluorodoo		acid									
613.00 > 569.00		4.116	0.0	1.000	1897615	47.9		95.8	1697		
D 36 13C2 PFD											
615.00 > 570.00		4.116	0.0		2132880	47.8		95.5	4645		
D 38 d-N-EtFOS	A-M										
531.00 > 169.00		4.167	0.0		2461076	50.4		101	6678		
39 N-ethylperflu	ioro-1-0	ctanesu	lfonami								
526.00 > 169.00		4.175		1.000	2270557	49.7		99.5	6178		
41 Perfluorotrid		acid									
663.00 > 619.00		4.380	0.0	1.000	1905013	52.5		105	680		
42 Perfluorotetr											
712.50 > 668.90		4.614	0.0	1.000	4325152	52.8		106	289		
713.00 > 169.00		4.614	0.0	1.000	519148		8.33(0.00-0.00)		5371		
D 43 13C2-PFTe	eDA						, ,				
715.00 > 670.00		4.614	0.0		4102660	50.5		101	17454		
45 Perfluorohex	kadecan	oic acid									
813.00 > 769.00		5.025	0.0	1.000	1746534	51.1		102	258		
D 44 13C2-PFH)											
815.00 > 770.00		5.025	0.0		2161781	52.3		105	3570		
46 Perfluorooct			-								
913.00 > 869.00		5.383	0.0	1.000	1749988	53.6		107	779		
		3.000	0			55.5					
QC Flag Leg	iend										

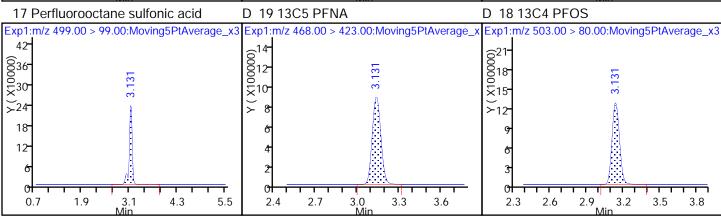
OC Flag Legend Processing Flags

NC - Not Calibrated

Reagents:

LCPFC_FULL-L5_00005 Amount Added: 1.00 Units: mL

Report Date: 26-Jul-2017 11:33:09 Chrom Revision: 2.2 26-Jun-2017 08:09:44 TestAmerica Sacramento Data File: \ChromNa\Sacramento\ChromData\A8_N\20170726-45877.b\2017.07.25B_012.d **Injection Date:** 25-Jul-2017 15:26:41 Instrument ID: A8_N Lims ID: CCV L5 Client ID: Operator ID: SACINSTLCMS01 ALS Bottle#: 32 Worklist Smp#: 12 Injection Vol: 2.0 ul Dil. Factor: 1.0000 Method: Limit Group: LC PFC_DOD ICAL $A8_N$ D 113C4 PFBA 2 Perfluorobutyric acid D 313C5-PFPeA Exp1:m/z 212.90 > 169.00:Moving5PtAverage_x Exp1:m/z 267.90 > 223.00:Moving5PtAverage_x Exp1:m/z 217.00 > 172.00:Moving5PtAverage_x 28 ©35-030-036 030 00024 0000 20 X $\stackrel{\textstyle \smile}{\sim}_{24}$ $\stackrel{\smile}{\times}_{25}$. 16 18 12 15 10 1.1 1.4 1.7 2.0 0.5 1.1 1.7 2.3 1.4 2.0 2.3 5 Perfluorobutanesulfonic acid 5 Perfluorobutanesulfonic acid 4 Perfluoropentanoic acid Exp1:m/z 262.90 > 219.00:Moving5PtAverage_x Exp1:m/z 298.90 > 80.00:Moving5PtAverage_x3 Exp1:m/z 298.90 > 99.00:Moving5PtAverage_x3 (0000015 (000015 (12-00024 00024 ×20 0642 0635 **-**28 21 14 2.5 1.3 1.9 2.2 2.0 2.3 2.0 1.0 1.6 1.1 1.4 1.1 1.4 2.3 61 Sodium 1H,1H,2H,2H-perfluorohexable 7 13C2 PFHxA 6 Perfluorohexanoic acid ____ Exp1:m/z 315.00 > 270.00:Moving5PtAverage_x 281 Exp1:m/z 327.00 > 307.00:Moving5PtAverage_x Exp1:m/z 313.00 > 269.00:Moving5PtAverage_x 24 (00020 ×16 (00001 X) 16 0072 ×60 ≻48 12 12 36 24 12 2.2 2.8 1.5 1.8 2.1 1.7 2.0 1.6 2.4 2.7 1.4 2.3 2.6 1.0 1.2 1.1 9 13C4-PFHpA 10 Perfluoroheptanoic acid D 11 1802 PFHxS Exp1:m/z 403.00 > 84.00:Moving5PtAverage_x3 Exp1:m/z 367.00 > 322.00:Moving5PtAverage_x Exp1:m/z 363.00 > 319.00:Moving5PtAverage_ 21-000018 ×15-(21-000018-15-©28-0024-16 0 0 0 2.0 2.3 2.9 1.9 Page 865 rof 1104 2.0 2.3 2.6 2.9 1.7 2.6 1.6 1.7



Chrom Revision: 2.2 26-Jun-2017 08:09:44

3.7

4.0

4.3

3.4

3.1

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4.3

3.4

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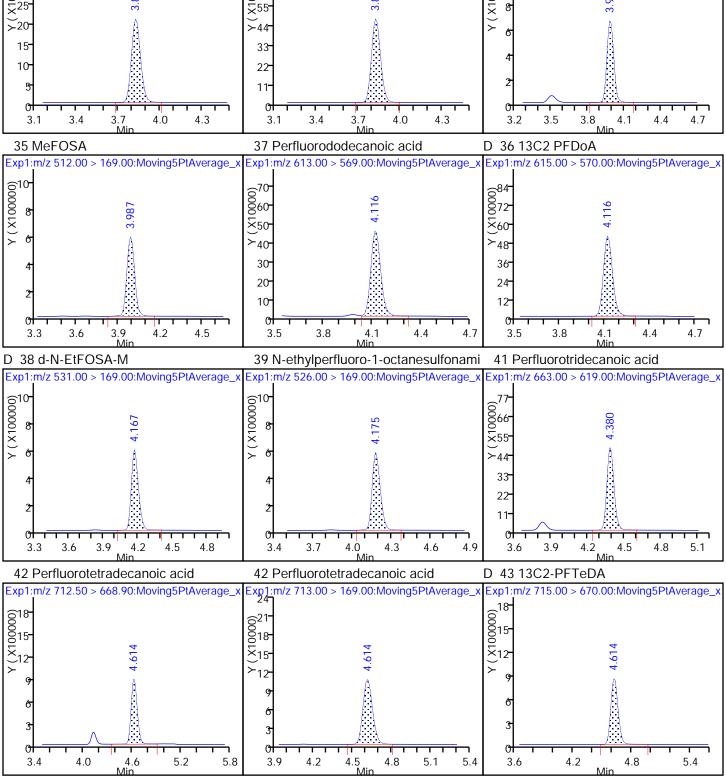
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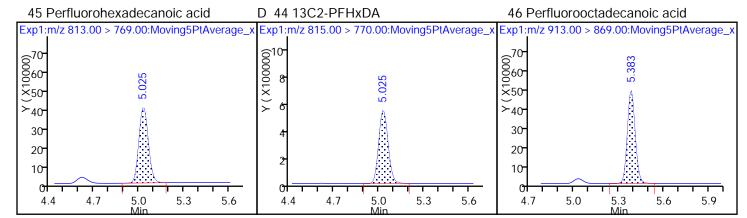
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Report Date: 26-Jul-2017 11:33:09 Chrom Revision: 2.2 26-Jun-2017 08:09:44

Data File: \ChromNa\Sacramento\ChromData\A8_N\20170726-45877.b\2017.07.25B_012.d



Lab Name: TestAmerica Sacramento Job No.: 320-29732-1

SDG No.:

Lab Sample ID: <u>CCVL 320-176352/3</u> Calibration Date: <u>07/27/2017 12:19</u>

Instrument ID: A8_N Calib Start Date: 07/23/2017 13:10

GC Column: GeminiC18 3×100 ID: 3.00 (mm) Calib End Date: 07/23/2017 13:58

Lab File ID: 2017.07.27A_004.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanoic acid (PFBA)	AveID	0.8820	0.9189		1.04	1.00	4.2	50.0
Perfluoropentanoic acid (PFPeA)	AveID	1.042	0.9866		0.947	1.00	-5.3	50.0
Perfluorobutanesulfonic acid (PFBS)	AveID	1.489	1.471		0.873	0.884	-1.2	50.0
Perfluorohexanoic acid (PFHxA)	AveID	0.9521	0.9061		0.952	1.00	-4.8	50.0
Perfluoroheptanoic acid (PFHpA)	AveID	1.026	1.076		1.05	1.00	4.8	50.0
Perfluorohexanesulfonic acid (PFHxS)	AveID	1.082	1.140		0.959	0.910	5.3	50.0
6:2FTS	AveID	0.8958	1.019		1.08	0.948	13.8	50.0
Perfluorooctanoic acid (PFOA)	AveID	1.067	1.047		0.982	1.00	-1.8	50.0
Perfluoroheptanesulfonic Acid (PFHpS)	AveID	1.122	1.088		0.924	0.952	-3.0	50.0
Perfluorooctanesulfonic acid (PFOS)	AveID	1.057	1.018		0.893	0.928	-3.7	50.0
Perfluorononanoic acid (PFNA)	AveID	1.018	0.9695		0.952	1.00	-4.8	50.0
Perfluorooctane Sulfonamide (FOSA)	AveID	0.9018	0.8899		0.987	1.00	-1.3	50.0
8:2FTS	AveID	0.9107	0.9055		0.953	0.958	-0.6	50.0
Perfluorodecanoic acid (PFDA)	AveID	0.9799	0.9303		0.949	1.00	-5.1	50.0
N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA)	AveID	0.9100	0.9218		1.01	1.00	1.3	50.0
Perfluorodecanesulfonic acid (PFDS)	AveID	0.6225	0.6379		0.988	0.964	2.5	50.0
N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)	AveID	0.8488	0.9035		1.06	1.00	6.4	50.0
Perfluoroundecanoic acid (PFUnA)	L2ID		1.106		0.973	1.00	-2.7	50.0
MeFOSA	AveID	0.9183	0.8647		0.942	1.00	-5.8	50.0
N-EtFOSA-M	AveID	0.9274	0.9072		0.978	1.00	-2.2	50.0
Perfluorododecanoic acid (PFDoA)	AveID	0.9292	0.9660		1.04	1.00	4.0	50.0
Perfluorotridecanoic Acid (PFTriA)	AveID	0.8514	0.8133		0.955	1.00	-4.5	50.0
Perfluorotetradecanoic acid (PFTeA)	AveID	1.922	2.181		1.13	1.00	13.5	50.0
Perfluoro-n-hexadecanoic acid (PFHxDA)	L2ID		1.541		1.28	1.00	28.0	50.0
Perfluoro-n-octadecanoic acid (PFODA)	AveID	0.7652	0.8208		1.07	1.00	7.3	50.0
13C4 PFBA	Ave	156025	173504		55.6	50.0	11.2	50.0
13C5 PFPeA	Ave	110496	132018		59.7	50.0	19.5	50.0
13C2 PFHxA	Ave	101156	122309		60.5	50.0	20.9	50.0
13C4-PFHpA	Ave	83824	102447		61.1	50.0	22.2	50.0
1802 PFHxS	Ave	137438	164725		56.7	47.3	19.9	50.0
M2-6:2FTS	Ave	47560	52803		52.7	47.5	11.0	50.0

Lab Name: TestAmerica Sacramento Job No.: 320-29732-1

SDG No.:

Lab Sample ID: <u>CCVL 320-176352/3</u> Calibration Date: <u>07/27/2017 12:19</u>

Instrument ID: A8_N Calib Start Date: 07/23/2017 13:10

GC Column: GeminiC18 3×100 ID: 3.00 (mm) Calib End Date: 07/23/2017 13:58

Lab File ID: 2017.07.27A_004.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE CF	CF	MIN CF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
13C4 PFOA	Ave	82143	103057		62.7	50.0	25.5	50.0
13C4 PFOS	Ave	108200	128541		56.8	47.8	18.8	50.0
13C5 PFNA	Ave	65740	83946		63.8	50.0	27.7	50.0
13C8 FOSA	Ave	182802	204146		55.8	50.0	11.7	50.0
M2-8:2FTS	Ave	36500	39801		52.2	47.9	9.0	50.0
13C2 PFDA	Ave	55836	71465		64.0	50.0	28.0	50.0
d3-NMeFOSAA	Ave	21732	26356		60.6	50.0	21.3	50.0
13C2 PFUnA	Ave	40729	53492		65.7	50.0	31.3	50.0
d5-NEtFOSAA	Ave	21931	27109		61.8	50.0	23.6	50.0
d-N-MeFOSA-M	Ave	47115	49445		52.5	50.0	4.9	50.0
d-N-EtFOSA-M	Ave	48834	50845		52.1	50.0	4.1	50.0
13C2 PFDoA	Ave	44655	53658		60.1	50.0	20.2	50.0
13C2-PFTeDA	Ave	81216	100679		62.0	50.0	24.0	50.0
13C2-PFHxDA	Ave	41307	51220		62.0	50.0	24.0	50.0

Report Date: 27-Jul-2017 16:38:58 Chrom Revision: 2.2 26-Jun-2017 08:09:44

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170727-45964.b\2017.07.27A_004.d

Lims ID: CCVL

Client ID:

Sample Type: CCVL

Inject. Date: 27-Jul-2017 12:19:43 ALS Bottle#: 29 Worklist Smp#: 3

Injection Vol: 2.0 ul Dil. Factor: 1.0000

Sample Info: CCVL

Misc. Info.: Plate: 1 Rack: 1

Operator ID: SACINSTLCMS01 Instrument ID: A8_N

Sublist: chrom-A8_N*sub18

Method: \ChromNa\Sacramento\ChromData\A8_N\20170727-45964.b\A8_N.m

Limit Group: LC PFC_DOD ICAL

Last Update: 27-Jul-2017 16:38:58 Calib Date: 23-Jul-2017 13:58:26

Integrator: Picker

Quant Method: Isotopic Dilution Quant By: Initial Calibration

Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20170723-45765.b\2017.07.23ICAL_010.d

Column 1: Det: EXP1

Process Host: XAWRK031

First Level Reviewer: chandrasenas Date: 27-Jul-2017 14:51:47

First Level Reviewer. Chandraserias					Date.		7-Jui-2017 14.51.47			
Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 113C4 PFBA	\									
217.00 > 172.00		1.582	0.001		8675177	55.6		111	30732	
2 Perfluorobuty	yric acid									
212.90 > 169.00	1.583	1.582	0.001	1.000	159431	1.04		104	86.8	
D 3 13C5-PFPe										
267.90 > 223.00			0.002		6600913	59.7		119	51450	
4 Perfluoropen			0.000	1 000	120252	0.04/0		047	70.4	
262.90 > 219.00		1.810	0.002	1.000	130253	0.9468		94.7	78.1	
D 47 13C3-PFB9 301.90 > 83.00		1.831	0.013		155823	NC			5548	
5 Perfluorobuta			0.013		133023	NC			3340	
298.90 > 80.00		1.841	0.003	1.000	214219	0.8733		98.8	149	
298.90 > 99.00		1.841	0.003	1.000	87553		2.45(0.00-0.00)		171	
61 Sodium 1H,	1H,2H,2	H-perflu	orohexar	ne						
327.00 > 307.00	2.066	2.052	0.014	1.000	51264	1.00		107	3379	
D 7 13C2 PFHx										
315.00 > 270.00	2.100	2.086	0.014		6115448	60.5		121	24342	
6 Perfluorohex										
313.00 > 269.00		2.086	0.014	1.000	110819	0.9517		95.2	396	
D 9 13C4-PFHp		2.427	0.015		F122220	/1.1		100	10/0/	
367.00 > 322.00		2.426	0.015		5122338	61.1		122	18686	
10 Perfluorohe ₁ 363.00 > 319.00	•	acid 2.426	0.015	1.000	110209	1.05		105	285	
D 11 1802 PFH		2.420	0.015	1.000	110209	1.05		105	200	
403.00 > 84.00		2.442	0.015		7791480	56.7		120	20630	
8 Perfluorohex			5.010		,,,,,,,,,	00.7		120	20000	
399.00 > 80.00		2.442	0.015	1.000	170847	0.9587		105	247	
					Dogo 972 of 1					

Report Date: 27- Data File:				o\Chrom			26-Jun-2017 08:09 4.b\2017.07.27A_0			
Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 12 M2-6:2FTS 429.00 > 409.00		2.768	0.014		2508139	52.7		111	19759	
13 Sodium 1H, 427.00 > 407.00		H-perfluo 2.768		e 1.000	51014	1.08		114	2734	
* 62 13C2-PFOA 415.00 > 370.00	2.804	2.790	0.014		4936980	50.0		100	21866	
D 14 13C4 PFO 417.00 > 372.00	2.811	2.797	0.014		5152838	62.7		125	22072	
15 Perfluorooc 413.00 > 369.00 413.00 > 169.00	2.811 2.811	2.797 2.797	0.014 0.014	1.000 1.000	107934 63700	0.9818	1.69(0.90-1.10)	98.2	23.5 783	
16 Perfluorohe 449.00 > 80.00	2.818	fonic Aci 2.797	0.021	1.000	133178	0.9238		97.0	4569	
D 18 13C4 PFO 503.00 > 80.00	3.188	3.178	0.010		6144245	56.8		119	21497	
D 19 13C5 PFN 468.00 > 423.00 20 Perfluorono	3.188	3.178	0.010		4197299	63.8		128	14779	
463.00 > 419.00 17 Perfluorooc	3.195	3.178	0.017	1.000	81389	0.9523		95.2	219	
499.00 > 80.00		3.178 3.178	0.010 0.010	1.000 1.000	121403 26158	0.8934	4.64(0.90-1.10)	96.3	1728 283	
22 Perfluorooc 498.00 > 78.00	3.484		e -0.022	1.000	181669	0.9868		98.7	3201	
D 21 13C8 FOS 506.00 > 78.00	3.484	3.506	-0.022		10207301	55.8		112	12099	
D 26 M2-8:2FTS 529.00 > 509.00	3.539				1906453	52.2		109	17965	
25 Sodium 1H, 527.00 > 507.00	3.539	•		ne 1.000	34524	0.9525		99.4	1167	
D 23 13C2 PFD. 515.00 > 470.00	3.560	3.538	0.022		3573252	64.0		128	7238	
24 Perfluorode 513.00 > 469.00	3.560	cid 3.538	0.022	1.000	66484	0.9494		94.9	299	
D 27 d3-NMeFC 573.00 > 419.00	3.709	3.694	0.015		1317779	60.6		121	13527	
28 N-methyl pe 570.00 > 419.00	3.719	3.704	0.015	1.003	24294	1.01		101	1039	
29 Perfluorode 599.00 > 80.00	3.869		0.011	1.000	79041	0.9879		102	3185	
D 32 d5-NEtFOS 589.00 > 419.00	3.886	3.867	0.019		1355448	61.8		124	4077	
D 30 13C2 PFU 565.00 > 520.00	3.886	3.876	0.010		2674584	65.7		131	6769	
33 N-ethyl perf 584.00 > 419.00	3.886	3.876	0.010	1.000	24492	1.06		106	636	
31 Perfluoroun			0.010	1 000	E01E7	0.0727		07.2	114	

Page 873 of 1104^{0.9727}

97.3

146

563.00 > 519.00 3.895 3.876 0.019 1.000

Report Date: 27-Jul-2017 16:38:58 Chrom Revision: 2.2 26-Jun-2017 08:09:44 \\ChromNa\Sacramento\ChromData\A8_N\20170727-45964_b\2017_07_27A_004_d

[Data File:	\\Chrc	mNa\Sa	acrament	io\Chrom	Data\A8_N\201	70727-4596	4.b\2017.07.27A_0	04.d		
	Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
[O 34 d-N-MeFO	SA-M									
	515.00 > 169.00		3.996	-0.033		2472270	52.5		105	688	
	35 MeFOSA										
ļ	512.00 > 169.00	3.970	4.004	-0.034	1.000	42755	0.9416		94.2	1461	
	36 13C2 PFD	Ac									
(615.00 > 570.00	4.192	4.165	0.027		2682886	60.1		120	3193	
	37 Perfluorodo										
	613.00 > 569.00		4.165	0.027	1.000	51832	1.04		104	10.9	
	38 d-N-EtFOS			0.007		05.4007.4	50.4		101	0570	
	531.00 > 169.00			-0.026		2542274	52.1		104	3573	
	39 N-ethylperflu				1 000	4/10/	0.0702		07.0	1000	
,	526.00 > 169.00		4.193	-0.027	1.000	46126	0.9782		97.8	1208	
	41 Perfluorotrid 663.00 > 619.00		acid 4.437	0.028	1.000	43642	0.9553		95.5	11.5	
	003.00 > 019.00 0 43 13C2-PFTe		4.437	0.026	1.000	43042	0.9333		95.5	11.5	
	715.00 > 670.00		4.677	0.031		5033962	62.0		124	4744	
	42 Perfluoroteti			0.001		3033702	02.0		127	7,77	M
	712.50 > 668.90		4.677	0.041	1.000	117053	1.13		113	9.1	M
	713.00 > 169.00		4.677	0.031	0.998	14746		7.94(0.00-0.00)		241	
	0 44 13C2-PFH	xDA									
;	815.00 > 770.00	5.145	5.095	0.049		2561016	62.0		124	2389	
	45 Perfluorohe	xadecan	oic acid								
1	813.00 > 769.00	5.145	5.095	0.049	1.000	82673	1.28		128	20.8	
	46 Perfluorooct	tadecand	oic acid								
(913.00 > 869.00	5.535	5.462	0.073	1.000	44041	1.07		107	17.8	

OC Flag Legend Processing Flags

NC - Not Calibrated

Review Flags

M - Manually Integrated

Reagents:

LCPFC_FULL-L2_00004 Amount Added: 1.00 Units: mL

Report Date: 27-Jul-2017 16:38:58 Chrom Revision: 2.2 26-Jun-2017 08:09:44 TestAmerica Sacramento Data File: **Injection Date:** 27-Jul-2017 12:19:43 Instrument ID: A8_N Lims ID: **CCVL** Client ID: Operator ID: SACINSTLCMS01 ALS Bottle#: 29 Worklist Smp#: 3 Injection Vol: 2.0 ul Dil. Factor: 1.0000 Method: Limit Group: LC PFC_DOD ICAL $A8_N$ D 113C4 PFBA 2 Perfluorobutyric acid D 313C5-PFPeA Exp1:m/z 212.90 > 169.00:Moving5PtAverage_x | Exp1:m/z 267.90 > 223.00:Moving5PtAverage_x Exp1:m/z 217.00 > 172.00:Moving5PtAverage_> (00030 X25 ©28 ©24 ×45 $\stackrel{\smile}{\times}_{20}$ -20 15 27 12 10 18 1.7 1.3 1.9 1.1 2.3 1.0 1.6 2.0 5 Perfluorobutanesulfonic acid 5 Perfluorobutanesulfonic acid 4 Perfluoropentanoic acid Exp1:m/z 262.90 > 219.00:Moving5PtAverage_x Exp1:m/z 298.90 > 80.00:Moving5PtAverage_x3 Exp1:m/z 298.90 > 99.00:Moving5PtAverage_x3 V (X10000) 42 63 (36-(36-(36-0 54 ×45 **≻**36 18 27 12 18 2.2 1.7 2.0 2.3 1.7 1.9 2.0 1.3 1.6 1.4 1.4 2.3 61 Sodium 1H,1H,2H,2H-perfluorohexable 7 13C2 PFHxA 6 Perfluorohexanoic acid Exp1:m/z 315.00 > 270.00:Moving5PtAverage_x Exp1:m/z 327.00 > 307.00:Moving5PtAverage_x Exp1:m/z 313.00 > 269.00:Moving5PtAverage_x 28 49 00024- ©24-0020-× × 16-0642 ×35- ×16 >28 12 21 14 1.7 2.0 1.8 2.1 2.4 2.7 1.8 2.1 2.7 2.3 2.6 1.5 1.5 2.4 1.4 9 13C4-PFHpA 10 Perfluoroheptanoic acid D 11 1802 PFHxS Exp1:m/z 367.00 > 322.00:Moving5PtAverage_x Exp1:m/z 363.00 > 319.00:Moving5PtAverage_> Exp1:m/z 403.00 > 84.00:Moving5PtAverage_x3 35 49 (21-000018-15-00030 25-042 ×35 20 ∑28- 15 21 10 14 0 0 02.0 2.3 2.6 2.9 3.2 1.9 Page 875 1104 2.8 2.1 2.4 2.7 3.0 1.7 1.8

3.3

3.6

1.7

2.3

2.9

3.5

4.1

3.0

2.5

2.8

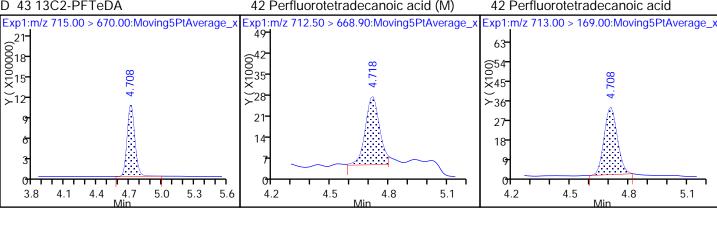
3.1 Mir 3.4

3.7

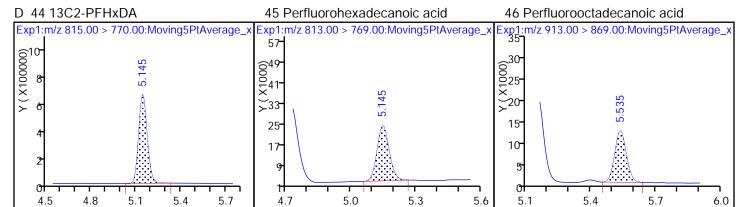
2.7

Chrom Revision: 2.2 26-Jun-2017 08:09:44

Report Date: 27-Jul-2017 16:38:58



Report Date: 27-Jul-2017 16:38:59 Chrom Revision: 2.2 26-Jun-2017 08:09:44



Report Date: 27-Jul-2017 16:38:59 Chrom Revision: 2.2 26-Jun-2017 08:09:44 Manual Integration/User Assign Peak Report

TestAmerica Sacramento

Data File: \ChromNa\Sacramento\ChromData\A8_N\20170727-45964.b\2017.07.27A_004.d

Injection Date: 27-Jul-2017 12:19:43 Instrument ID: A8_N

Lims ID: CCVL

Client ID:

Operator ID: SACINSTLCMS01 ALS Bottle#: 29 Worklist Smp#: 3

Injection Vol: 2.0 ul Dil. Factor: 1.0000

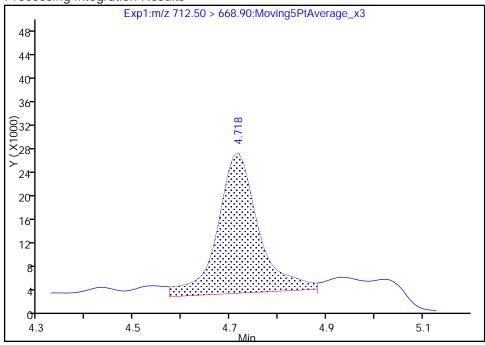
Method: A8_N Limit Group: LC PFC_DOD ICAL

Column: Detector EXP1

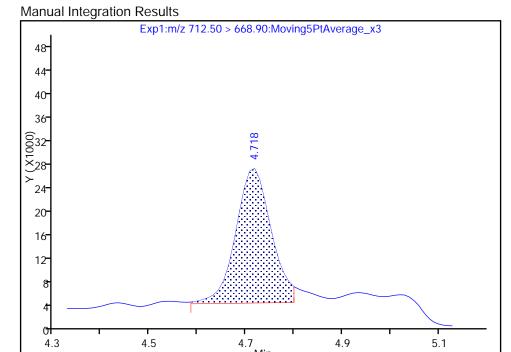
42 Perfluorotetradecanoic acid, CAS: 376-06-7

Signal: 1

RT: 4.72 Area: 141292 Amount: 1.370007 Amount Units: ng/ml **Processing Integration Results**



RT: 4.72 Area: 117053 Amount: 1.134979 Amount Units: ng/ml



Reviewer: chandrasenas, 27-Jul-2017 14:51:20

Audit Action: Manually Integrated

Audit Reason: Baseline

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Lab Name: TestAmerica Sacramento Job No.: 320-29732-1

SDG No.:

Lab Sample ID: CCV 320-176487/1 Calibration Date: 07/27/2017 20:48

Instrument ID: A8_N Calib Start Date: 07/23/2017 13:10

GC Column: GeminiC18 3×100 ID: 3.00 (mm) Calib End Date: 07/23/2017 13:58

Lab File ID: 2017.07.27C_001.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanoic acid (PFBA)	AveID	0.8820	0.9633		21.8	20.0	9.2	25.0
Perfluoropentanoic acid (PFPeA)	AveID	1.042	1.025		19.7	20.0	-1.7	25.0
Perfluorobutanesulfonic acid (PFBS)	AveID	1.489	1.421		16.9	17.7	-4.6	25.0
Perfluorohexanoic acid (PFHxA)	AveID	0.9521	0.9720		20.4	20.0	2.1	25.0
Perfluoroheptanoic acid (PFHpA)	AveID	1.026	0.9761		19.0	20.0	-4.9	25.0
Perfluorohexanesulfonic acid (PFHxS)	AveID	1.082	0.9763		16.4	18.2	-9.8	25.0
6:2FTS	AveID	0.8958	0.9075		19.2	19.0	1.3	25.0
Perfluorooctanoic acid (PFOA)	AveID	1.067	1.037		19.4	20.0	-2.8	25.0
Perfluoroheptanesulfonic Acid (PFHpS)	AveID	1.122	1.228		20.8	19.0	9.5	25.0
Perfluorononanoic acid (PFNA)	AveID	1.018	1.000		19.6	20.0	-1.8	25.0
Perfluorooctanesulfonic acid (PFOS)	AveID	1.057	1.113		19.5	18.6	5.3	25.0
8:2FTS	AveID	0.9107	0.9620		20.2	19.2	5.6	25.0
Perfluorooctane Sulfonamide (FOSA)	AveID	0.9018	0.9208		20.4	20.0	2.1	25.0
Perfluorodecanoic acid (PFDA)	AveID	0.9799	0.8767		17.9	20.0	-10.5	25.0
N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA)	AveID	0.9100	0.9031		19.8	20.0	-0.8	25.0
Perfluorodecanesulfonic acid (PFDS)	AveID	0.6225	0.6695		20.7	19.3	7.6	25.0
N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)	AveID	0.8488	0.8705		20.5	20.0	2.5	25.0
Perfluoroundecanoic acid (PFUnA)	L2ID		1.032		20.0	20.0	0.1	25.0
MeFOSA	AveID	0.9183	0.9222		20.1	20.0	0.4	25.0
Perfluorododecanoic acid (PFDoA)	AveID	0.9292	0.9201		19.8	20.0	-1.0	25.0
N-EtFOSA-M	AveID	0.9274	0.9040		19.5	20.0	-2.5	25.0
Perfluorotridecanoic Acid (PFTriA)	AveID	0.8514	0.8849		20.8	20.0	3.9	25.0
Perfluorotetradecanoic acid (PFTeA)	AveID	1.922	1.856		19.3	20.0	-3.4	25.0
Perfluoro-n-hexadecanoic acid (PFHxDA)	L2ID		0.9791		24.1	20.0	20.3	25.0
Perfluoro-n-octadecanoic acid (PFODA)	AveID	0.7652	1.044		27.3	20.0	36.5*	25.0
13C4 PFBA	Ave	156025	189627		60.8	50.0	21.5	50.0
13C5 PFPeA	Ave	110496	137705		62.3	50.0	24.6	50.0
13C2 PFHxA	Ave	101156	125658		62.1	50.0	24.2	50.0
13C4-PFHpA	Ave	83824	111136		66.3	50.0	32.6	50.0
1802 PFHxS	Ave	137438	161465		55.6	47.3	17.5	50.0
M2-6:2FTS	Ave	47560	62339		62.3	47.5	31.1	50.0

Lab Name: TestAmerica Sacramento Job No.: 320-29732-1

SDG No.:

Lab Sample ID: <u>CCV 320-176487/1</u> Calibration Date: <u>07/27/2017 20:48</u>

Instrument ID: A8_N Calib Start Date: 07/23/2017 13:10

GC Column: GeminiC18 3×100 ID: 3.00 (mm) Calib End Date: 07/23/2017 13:58

Lab File ID: 2017.07.27C_001.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE CF	CF	MIN CF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
13C4 PFOA	Ave	82143	102008		62.1	50.0	24.2	50.0
13C4 PFOS	Ave	108200	110913		49.0	47.8	2.5	50.0
13C5 PFNA	Ave	65740	78128		59.4	50.0	18.8	50.0
13C8 FOSA	Ave	182802	193177		52.8	50.0	5.7	50.0
M2-8:2FTS	Ave	36500	48887		64.2	47.9	33.9	50.0
13C2 PFDA	Ave	55836	72114		64.6	50.0	29.2	50.0
d3-NMeFOSAA	Ave	21732	25607		58.9	50.0	17.8	50.0
d5-NEtFOSAA	Ave	21931	25970		59.2	50.0	18.4	50.0
13C2 PFUnA	Ave	40729	49147		60.3	50.0	20.7	50.0
d-N-MeFOSA-M	Ave	47115	48915		51.9	50.0	3.8	50.0
13C2 PFDoA	Ave	44655	50771		56.8	50.0	13.7	50.0
d-N-EtFOSA-M	Ave	48834	52382		53.6	50.0	7.3	50.0
13C2-PFTeDA	Ave	81216	90271		55.6	50.0	11.1	50.0
13C2-PFHxDA	Ave	41307	56162		68.0	50.0	36.0	50.0

Report Date: 28-Jul-2017 14:14:11 Chrom Revision: 2.2 26-Jun-2017 08:09:44

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170728-45994.b\2017.07.27C_001.d

Lims ID: CCV L4

Client ID:

Sample Type: CCV

Inject. Date: 27-Jul-2017 20:48:52 ALS Bottle#: 31 Worklist Smp#: 1

Injection Vol: 2.0 ul Dil. Factor: 1.0000

Sample Info: CCV L4

Misc. Info.: Plate: 1 Rack: 1

Operator ID: SACINSTLCMS01 Instrument ID: A8_N

Sublist: chrom-A8_N*sub18

Method: \ChromNa\Sacramento\ChromData\A8_N\20170728-45994.b\A8_N.m

Limit Group: LC PFC_DOD ICAL

Last Update: 28-Jul-2017 14:14:10 Calib Date: 23-Jul-2017 13:58:26

Integrator: Picker

Quant Method: Isotopic Dilution Quant By: Initial Calibration

Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20170723-45765.b\2017.07.23ICAL_010.d

Column 1 : Det: EXP1

Process Host: XAWRK013

Process Host:	XAWI	RK013								
Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
2 Perfluorobut	,	4 5 / 5	0.000	1 000	0/50540	01.0		100	4457	
212.90 > 169.00		1.565	0.009	1.000	3653510	21.8		109	1156	
D 1 13C4 PFBA 217.00 > 172.00		1.565	0.0		9481363	60.8		122	18580	
4 Perfluoroper			0.000	1 000	000007	40.7		00.0	4007	
262.90 > 219.00		1.784	0.009	1.000	2822097	19.7		98.3	1307	
D 3 13C5-PFPe 267.90 > 223.00		1.784	0.009		6885270	62.3		125	30652	
D 47 13C3-PFB										
301.90 > 83.00		1.802	0.011		151895	NC			8462	
5 Perfluorobut			0.001	1 000	4057201	1/ 0		OF 4	2720	
298.90 > 80.00 298.90 > 99.00	1.813	1.812 1.812	0.001 0.001	1.000 1.000	4057281 1691026	16.9	2.40(0.00-0.00)	95.4	2720 2772	
61 Sodium 1H,					1071020		2.40(0.00 0.00)		2772	
327.00 > 307.00		•	0.012	1.000	1215900	20.1		107	24213	
6 Perfluorohex			0.010	1 000	0.440705	00.4		100	0747	
313.00 > 269.00		2.054	0.012	1.000	2442705	20.4		102	3717	
D 7 13C2 PFHx 315.00 > 270.00		2.054	0.012		6282893	62.1		124	18916	
10 Perfluorohe	ptanoic a	acid								
363.00 > 319.00	•	2.385	0.017	1.000	2169507	19.0		95.1	2739	
D 9 13C4-PFHp 367.00 > 322.00		2.385	0.017		5556793	66.3		133	15821	
8 Perfluorohex					3330773	00.5		133	13021	
399.00 > 80.00		2.401	0.017	1.000	2869086	16.4		90.2	2209	
D 11 1802 PFH:	xS									
403.00 > 84.00	2.418	2.401	0.017		7637307	55.6		117	22586	
13 Sodium 1H,		•			1070574	10.0		404	00/70	
427.00 > 407.00	2.735	2./11	0.024	1.000	1072574 Page 883 of 1	19.2 104		101	23678	

Report Date: 28- Data File:				to\Chrom			26-Jun-2017 08:09 4.b\2017.07.27C_0			
Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 12 M2-6:2FTS 429.00 > 409.00	2.735	2.711	0.024		2961107	62.3		131	17939	
* 62 13C2-PFOA 415.00 > 370.00	2.756	2.733	0.023		5128145	50.0		100	17240	
15 Perfluorooc 413.00 > 369.00 413.00 > 169.00	2.764	2.740 2.740	0.024 0.024	1.000 1.000	2116024 1185632	19.4	1.78(0.90-1.10)	97.2	360 5123	
D 14 13C4 PFO 417.00 > 372.00	2.764	2.740	0.024		5100413	62.1		124	23465	
16 Perfluorohe 449.00 > 80.00		Itonic Ac 2.747	0.024	1.000	2592740	20.8		109	13929	
20 Perfluorono 463.00 > 419.00		icid 3.111	0.033	1.000	1562349	19.6		98.2	3663	
17 Perfluorooc 499.00 > 80.00 499.00 > 99.00	3.144	onic acio 3.111 3.111	0.033 0.033	1.000 1.000	2290939 446610	19.5	5.13(0.90-1.10)	105	56506 2850	
D 19 13C5 PFN. 468.00 > 423.00		3.111	0.033		3906399	59.4		119	11498	
D 18 13C4 PFO 503.00 > 80.00		3.111	0.033		5301658	49.0		103	16102	
22 Perfluorooc 498.00 > 78.00		fonamide 3.454	e 0.035	1.000	3557611	20.4		102	12125	
25 Sodium 1H, 527.00 > 507.00		H-perflue 3.454	orodecar 0.035	ne 1.000	901063	20.2		106	12359	
D 21 13C8 FOS 506.00 > 78.00		3.454	0.035		9658834	52.8		106	14110	
D 26 M2-8:2FTS 529.00 > 509.00		3.454	0.035		2341702	64.2		134	15254	
24 Perfluorode 513.00 > 469.00		cid 3.474	0.033	1.000	1264367	17.9		89.5	3722	
D 23 13C2 PFD. 515.00 > 470.00		3.474	0.033		3605677	64.6		129	6559	
28 N-methyl pe 570.00 > 419.00			lfonami 0.031	1.000	462505	19.8		99.2	5094	
D 27 d3-NMeFC 573.00 > 419.00		3.631	0.031		1280366	58.9		118	6213	
29 Perfluorode 599.00 > 80.00		Ifonic ac		1.000	1431645	20.7		108	8060	
D 32 d5-NEtFOS 589.00 > 419.00		3.787	0.039		1298519	59.2		118	2766	
31 Perfluoroun 563.00 > 519.00		c acid 3.797	0.038	1.000	1014555	20.0		100	1412	
33 N-ethyl perf	luorooct	ane sulfo		1 002		20 F				
584.00 > 419.00 D 30 13C2 PFU	nA	3.797		1.002	452116	20.5		103	4134	
565.00 > 520.00 35 MeFOSA	3.835	3.797	0.038		2457356	60.3		121	6875	

Page 884 of 1104 ^{20.1}

100

4774

512.00 > 169.00 3.991 3.956 0.035 1.000

Report Date: 28-Jul-2017 14:14:11
Data File: \ChromNa\Sac Chrom Revision: 2.2 26-Jun-2017 08:09:44 \\ChromNa\Sacramento\ChromData\A8_N\20170728-45994_h\2017_07_27C_001_d

Data File:	\\Chrc	omNa\Sa	acrament	:o\Chrom	Data\A8_N\201	70728-4599	4.b\2017.07.27C_0	01.d		
Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 34 d-N-MeFO	SA-M									
515.00 > 169.00		3.956	0.035		2445746	51.9		104	659	
D 36 13C2 PFD	nΑ									
615.00 > 570.00		4.088	0.041		2538572	56.8		114	3122	
37 Perfluorodo	decanoio	c acid								
613.00 > 569.00	4.129	4.096	0.033	1.000	934294	19.8		99.0	532	
39 N-ethylperflu	uoro-1-o	ctanesul	fonami							
526.00 > 169.00	4.180	4.147	0.033	1.000	947042	19.5		97.5	3805	
D 38 d-N-EtFOS	A-M									
531.00 > 169.00	4.171	4.147	0.024		2619105	53.6		107	3103	
41 Perfluorotrid	lecanoic	acid								
663.00 > 619.00	4.396	4.358	0.038	1.000	898572	20.8		104	197	
42 Perfluoroteti	radecan	oic acid								
712.50 > 668.90		4.593	0.037	1.000	1884538	19.3		96.6	112	
713.00 > 169.00		4.593	0.026	0.998	220482		8.55(0.00-0.00)		1579	
D 43 13C2-PFT										
715.00 > 670.00		4.593	0.037		4513564	55.6		111	3220	
D 44 13C2-PFH										
815.00 > 770.00		5.005	0.032		2808112	68.0		136	1570	
45 Perfluorohe			0.000	4 000	004407	0.1.4		400	10/	
813.00 > 769.00		5.015	0.022	1.000	994197	24.1		120	106	
46 Perfluorooct			0.004	4 000	40/0040	07.0		407	0.40	
913.00 > 869.00	5.386	5.365	0.021	1.000	1060248	27.3		136	269	
QC Flag Leg	gend									

Processing Flags
NC - Not Calibrated

Reagents:

LCPFC_FULL-L4_00005 Amount Added: 1.00 Units: mL

Report Date: 28-Jul-2017 14:14:11 Chrom Revision: 2.2 26-Jun-2017 08:09:44 TestAmerica Sacramento Data File: **Injection Date:** 27-Jul-2017 20:48:52 Instrument ID: A8_N Lims ID: CCV L4 Client ID: Operator ID: SACINSTLCMS01 ALS Bottle#: 31 Worklist Smp#: Injection Vol: 2.0 ul Dil. Factor: 1.0000 Method: Limit Group: LC PFC_DOD ICAL $A8_N$ 2 Perfluorobutyric acid D 113C4 PFBA 4 Perfluoropentanoic acid Exp1:m/z 212.90 > 169.00:Moving5PtAverage_x Exp1:m/z 217.00 > 172.00:Moving5PtAverage_x Exp1:m/z 262.90 > 219.00:Moving5PtAverage_x (42⁻ 00036⁻ ×30 (000012 1000012 (015-0000012 X) 9 18 12 1.7 2.0 1.1 1.4 2.0 1.0 1.3 1.6 1.9 2.5 5 Perfluorobutanesulfonic acid 5 Perfluorobutanesulfonic acid D 3 13C5-PFPeA Exp1:m/z 267.90 > 223.00:Moving5PtAverage_x Exp1:m/z 298.90 > 80.00:Moving5PtAverage_x3 Exp1:m/z 298.90 > 99.00:Moving5PtAverage_x3 80**1** 0018 000015 X) 12 ©30 00 00 25 (270-(260-(260-15 30 10 20 10 2.0 1.8 2.3 1.5 2.1 2.4 1.5 1.8 1.4 2.1 2.4 1.2 61 Sodium 1H,1H,2H,2H-perfluorohexan& Perfluorohexanoic acid 7 13C2 PFHxA Exp1:m/z 313.00 > 269.00:Moving5PtAverage_) Exp1:m/z 327.00 > 307.00:Moving5PtAverage_x Exp1:m/z 315.00 > 270.00:Moving5PtAverage_x 28 00024 20 20 (00048 (0048 (240 Y (X100000) >16⁻ 24 2.0 1.9 2.2 1.8 2.1 1.7 2.3 2.6 1.6 2.5 2.8 1.5 2.4 2.7 1.4 1.3 8 Perfluorohexanesulfonic acid 10 Perfluoroheptanoic acid 9 13C4-PFHpA Exp1:m/z 363.00 > 319.00:Moving5PtAverage_> Exp1:m/z 367.00 > 322.00:Moving5PtAverage_x Exp1:m/z 399.00 > 80.00:Moving5PtAverage_x3 (X100000) 6024 0020 684 672 ×60 <u>≻</u>16 ≻48 12 36 24 0 0 1.9 2.2 2.5 2.8 3.1 1.9 2.2 2.5 2.8 3.1 1.6 1.6 1.6

Report Date: 28-Jul-2017 14:14:11 Chrom Revision: 2.2 26-Jun-2017 08:09:44 Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170728-45994.b\2017.07.27C_001.d D 11 1802 PFHxS 13 Sodium 1H,1H,2H,2H-perfluoroocta De 12 M2-6:2FTS Exp1:m/z 427.00 > 407.00:Moving5PtAverage_x | Exp1:m/z 429.00 > 409.00:Moving5PtAverage_x Exp1:m/z 403.00 > 84.00:Moving5PtAverage_x3 35 (X) X (X100000) X (X) X (000001 ×) 20 X30-15 18 10 12 2.4 1.5 1.8 2.1 2.7 3.0 3.3 1.8 2.1 2.4 3.0 3.3 3.6 2.0 2.3 2.6 2.9 3.2 62 13C2-PFOA 15 Perfluorooctanoic acid 15 Perfluorooctanoic acid Exp1:m/z 415.00 > 370.00:Moving5PtAverage_x Exp1:m/z 413.00 > 369.00:Moving5PtAverage_x Exp1:m/z 413.00 > 169.00:Moving5PtAverage_> (000001X) X 49 84 ©72-560-0642 0835 ×35 ∑28- **≻**48⁻ 21 36 24 14 12 2.7 2.4 3.0 2.9 3.2 2.5 2.8 3.3 2.6 3.1 3.4 D 14 13C4 PFOA 16 Perfluoroheptanesulfonic Acid 20 Perfluorononanoic acid Exp1:m/z 417.00 > 372.00:Moving5PtAverage_x Exp1:m/z 449.00 > 80.00:Moving5PtAverage_x3 Exp1:m/z 463.00 > 419.00:Moving5PtAverage_> (X100000) (000015 X) 12 56- 0048 0048 ×40 **≻**32 24 16 0 1.9 2.2 2.5 2.8 2.3 2.6 2.9 3.2 3.5 2.9 3.2 3.5 3.1 3.4 2.0 2.3 2.6 3.8 17 Perfluorooctane sulfonic acid 17 Perfluorooctane sulfonic acid D 19 13C5 PFNA Exp1:m/z 499.00 > 80.00:Moving5PtAverage_x3 70 (0000012 X) > 9 (000012 ×) > 9 0660 X50 30

3.3

3.9

2.4

2.7

3.0

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3.1 Min 4.3

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12

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4.1

4.4

14

3.1

3.4

16

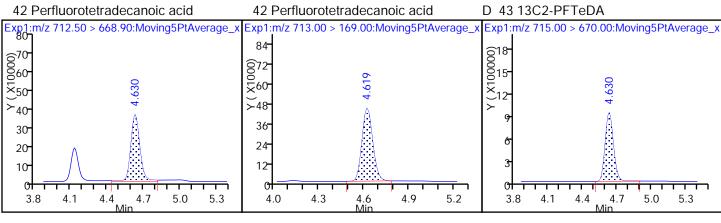
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3.5

3.8

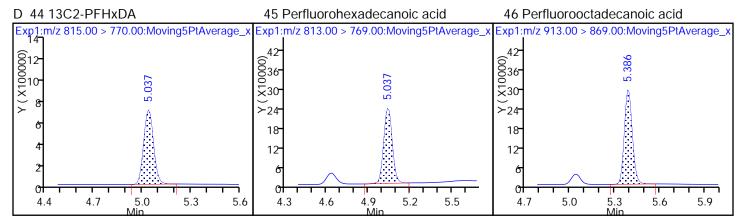
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4.4



Report Date: 28-Jul-2017 14:14:11 Chrom Revision: 2.2 26-Jun-2017 08:09:44

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170728-45994.b\2017.07.27C_001.d



Lab Name: TestAmerica Sacramento Job No.: 320-29732-1

SDG No.:

Lab Sample ID: <u>CCV 320-176487/12</u> Calibration Date: <u>07/27/2017 22:04</u>

Instrument ID: A8_N Calib Start Date: 07/23/2017 13:10

GC Column: GeminiC18 3×100 ID: 3.00 (mm) Calib End Date: 07/23/2017 13:58

Lab File ID: 2017.07.27C_012.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanoic acid (PFBA)	AveID	0.8820	0.9072		51.4	50.0	2.9	25.0
Perfluoropentanoic acid (PFPeA)	AveID	1.042	0.9625		46.2	50.0	-7.6	25.0
Perfluorobutanesulfonic acid (PFBS)	AveID	1.489	1.409		41.8	44.2	-5.4	25.0
Perfluorohexanoic acid (PFHxA)	AveID	0.9521	0.9321		48.9	50.0	-2.1	25.0
Perfluoroheptanoic acid (PFHpA)	AveID	1.026	0.9586		46.7	50.0	-6.6	25.0
Perfluorohexanesulfonic acid (PFHxS)	AveID	1.082	0.9797		41.2	45.5	-9.4	25.0
6:2FTS	AveID	0.8958	0.8372		44.3	47.4	-6.5	25.0
Perfluorooctanoic acid (PFOA)	AveID	1.067	1.047		49.1	50.0	-1.8	25.0
Perfluoroheptanesulfonic Acid (PFHpS)	AveID	1.122	1.132		48.0	47.6	0.9	25.0
Perfluorononanoic acid (PFNA)	AveID	1.018	0.996		48.9	50.0	-2.2	25.0
Perfluorooctanesulfonic acid (PFOS)	AveID	1.057	0.9886		43.4	46.4	-6.5	25.0
8:2FTS	AveID	0.9107	0.8990		47.3	47.9	-1.3	25.0
Perfluorooctane Sulfonamide (FOSA)	AveID	0.9018	0.8953		49.6	50.0	-0.7	25.0
Perfluorodecanoic acid (PFDA)	AveID	0.9799	0.8951		45.7	50.0	-8.6	25.0
N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA)	AveID	0.9100	0.8872		48.7	50.0	-2.5	25.0
Perfluorodecanesulfonic acid (PFDS)	AveID	0.6225	0.6080		47.1	48.2	-2.3	25.0
N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)	AveID	0.8488	0.8020		47.2	50.0	-5.5	25.0
Perfluoroundecanoic acid (PFUnA)	L2ID		0.9802		47.7	50.0	-4.6	25.0
MeFOSA	AveID	0.9183	0.8862		48.2	50.0	-3.5	25.0
Perfluorododecanoic acid (PFDoA)	AveID	0.9292	0.9512		51.2	50.0	2.4	25.0
N-EtFOSA-M	AveID	0.9274	0.9042		48.8	50.0	-2.5	25.0
Perfluorotridecanoic Acid (PFTriA)	AveID	0.8514	0.9157		53.8	50.0	7.6	25.0
Perfluorotetradecanoic acid (PFTeA)	AveID	1.922	1.898		49.4	50.0	-1.2	25.0
Perfluoro-n-hexadecanoic acid (PFHxDA)	L2ID		0.999		62.4	50.0	24.8	25.0
Perfluoro-n-octadecanoic acid (PFODA)	AveID	0.7652	1.014		66.3	50.0	32.5*	25.0
13C4 PFBA	Ave	156025	179234		57.4	50.0	14.9	50.0
13C5 PFPeA	Ave	110496	135283		61.2	50.0	22.4	50.0
13C2 PFHxA	Ave	101156	120814		59.7	50.0	19.4	50.0
13C4-PFHpA	Ave	83824	111594		66.6	50.0	33.1	50.0
1802 PFHxS	Ave	137438	160556		55.3	47.3	16.8	50.0
M2-6:2FTS	Ave	47560	57534		57.5	47.5	21.0	50.0

Lab Name: TestAmerica Sacramento Job No.: 320-29732-1

SDG No.:

Lab Sample ID: CCV 320-176487/12 Calibration Date: 07/27/2017 22:04

Instrument ID: A8_N Calib Start Date: 07/23/2017 13:10

GC Column: GeminiC18 3×100 ID: 3.00 (mm) Calib End Date: 07/23/2017 13:58

Lab File ID: 2017.07.27C_012.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE CF	CF	MIN CF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
13C4 PFOA	Ave	82143	97244		59.2	50.0	18.4	50.0
13C4 PFOS	Ave	108200	118951		52.5	47.8	9.9	50.0
13C5 PFNA	Ave	65740	73728		56.1	50.0	12.2	50.0
13C8 FOSA	Ave	182802	193888		53.0	50.0	6.1	50.0
M2-8:2FTS	Ave	36500	41121		54.0	47.9	12.7	50.0
13C2 PFDA	Ave	55836	68227		61.1	50.0	22.2	50.0
d3-NMeFOSAA	Ave	21732	24675		56.8	50.0	13.5	50.0
d5-NEtFOSAA	Ave	21931	26593		60.6	50.0	21.3	50.0
13C2 PFUnA	Ave	40729	47865		58.8	50.0	17.5	50.0
d-N-MeFOSA-M	Ave	47115	50676		53.8	50.0	7.6	50.0
13C2 PFDoA	Ave	44655	43800		49.0	50.0	-1.9	50.0
d-N-EtFOSA-M	Ave	48834	52177		53.4	50.0	6.8	50.0
13C2-PFTeDA	Ave	81216	87657		54.0	50.0	7.9	50.0
13C2-PFHxDA	Ave	41307	47512		57.5	50.0	15.0	50.0

Report Date: 28-Jul-2017 14:14:28 Chrom Revision: 2.2 26-Jun-2017 08:09:44

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170728-45994.b\2017.07.27C_012.d

Lims ID: CCV L5

Client ID:

Sample Type: CCV

Inject. Date: 27-Jul-2017 22:04:44 ALS Bottle#: 32 Worklist Smp#: 12

Injection Vol: 2.0 ul Dil. Factor: 1.0000

Sample Info: CCV L5

Misc. Info.: Plate: 1 Rack: 1

Operator ID: SACINSTLCMS01 Instrument ID: A8_N

Sublist: chrom-A8_N*sub18

Method: \ChromNa\Sacramento\ChromData\A8_N\20170728-45994.b\A8_N.m

Limit Group: LC PFC_DOD ICAL

Last Update: 28-Jul-2017 14:14:28 Calib Date: 23-Jul-2017 13:58:26

Integrator: Picker

Quant Method: Isotopic Dilution Quant By: Initial Calibration

Last ICal File: \ChromNA\Sacramento\ChromData\A8_N\20170723-45765.b\2017.07.23ICAL_010.d

Column 1: Det: EXP1

Process Host: XAWRK013

First Level Reviewer: barnettj Date: 28-Jul-2017 13:34:24

First Level Reviewer: barnettj					Date:	: 28-Jul-2017 13:34:24				
Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
2 Perfluorobutyric acid										
212.90 > 169.00	-	1.565	0.0	1.000	8129760	51.4		103	2656	
D 113C4 PFBA										
217.00 > 172.00		1.565	0.0		8961709	57.4		115	15932	
4 Perfluoroper			0.0	1 000	/5105/7	46.2		00.4	2027	
262.90 > 219.00		1.784	0.0	1.000	6510567	40.2		92.4	2827	
D 3 13C5-PFP6 267.90 > 223.00		1.784	0.0		6764156	61.2		122	39059	
D 47 13C3-PFB		11701	0.0		0,01100	01.2			0,00,	
301.90 > 83.00		1.802	0.0		158228	NC			5086	
5 Perfluorobutanesulfonic acid										
	1.812	1.812	0.0	1.000	10001760	41.8		94.6	307213	
	1.812	1.812		1.000	4099686		2.44(0.00-0.00)		59522	
61 Sodium 1H, 327.00 > 307.00		•			2500/17	447		OE O	27704	
			0.0	1.000	2500617	44.7		95.8	27706	
6 Perfluorohex 313.00 > 269.00		2.054	0.0	1.000	5630291	48.9		97.9	7304	
D 7 13C2 PFHx		2.001	0.0	1.000	0000271	10.7		,,,,	, 00 1	
315.00 > 270.00		2.054	0.0		6040702	59.7		119	20966	
10 Perfluorohe	ptanoic a	acid								
363.00 > 319.00	2.385	2.385	0.0	1.000	5348463	46.7		93.4	3203	
D 9 13C4-PFHp										
367.00 > 322.00		2.385			5579681	66.6		133	13250	
8 Perfluorohex				1 000	715//01	44.0		00 (4400	
399.00 > 80.00		2.401	0.0	1.000	7156691	41.2		90.6	4100	
D 11 18O2 PFH 403.00 > 84.00		2.401	0.0		7594307	55.3		117	15861	
703.00 / 04.00	Z.4U I	Z.4U I	0.0		7374307	33.3		117	13001	

Report Date: 28-Jul-2017 14:14:28 Chrom Revision: 2.2 26-Jun-2017 08:09:44

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170728-45994.b\2017.07.27C_012.d										
Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
13 Sodium 1H	I,1H,2H,2	:H-perflu	ıorooctan	е						
427.00 > 407.00		2.711		1.000	2283167	44.3		93.5	16085	
D 12 M2-6:2FT		0 711	0.0		2722077	F7 F		101	14100	
429.00 > 409.00 * 62 13C2-PFO		2.711	0.0		2732877	57.5		121	14183	
415.00 > 370.00	0 2.733	2.733	0.0		4816859	50.0		100	14872	
15 Perfluorood 413.00 > 369.00		2.740	0.0	1.000	5091667	49.1		98.2	755	
413.00 > 169.00		2.740		1.000	2814521		1.81(0.90-1.10)		6894	
D 14 13C4 PFC										
417.00 > 372.00		2.740			4862177	59.2		118	17384	
16 Perfluorohe	•			1 000	(4000/2	40.0		101	22040	
449.00 > 80.00 20 Perfluorono		2.747	0.0	1.000	6408962	48.0		101	22849	
463.00 > 419.00		3.111	0.0	1.000	3670939	48.9		97.8	5415	
17 Perfluorood										
499.00 > 80.00		3.111	0.0	1.000	5456171	43.4		93.5	9846	
499.00 > 99.00	3.111	3.111	0.0	1.000	1088019		5.01(0.90-1.10)		5200	
D 19 13C5 PFN 468.00 > 423.00		3.111	0.0		3686424	56.1		112	10212	
D 18 13C4 PFC										
503.00 > 80.00		3.111			5685875	52.5		110	16712	
22 Perfluorood 498.00 > 78.00				1.000	8679319	49.6		99.3	12260	
25 Sodium 1H					0077017	17.0		77.0	12200	
527.00 > 507.00		•		1.000	1770732	47.3		98.7	12698	
D 21 13C8 FOS	SA									
506.00 > 78.00	3.454	3.454	0.0		9694422	53.0		106	15183	
D 26 M2-8:2FT										
529.00 > 509.00		3.454	0.0		1969678	54.0		113	11819	
24 Perfluorode			0.0	1 000	2052/20	45.7		01.4	FF10	
513.00 > 469.00		3.474	0.0	1.000	3053630	45.7		91.4	5510	
D 23 13C2 PFD 515.00 > 470.00		3.474	0.0		3411325	61.1		122	7235	
28 N-methyl p					0111020	• • • • • • • • • • • • • • • • • • • •			0 0	
570.00 > 419.00		3.631		1.000	1094539	48.7		97.5	5507	
D 27 d3-NMeF0	OSAA									
573.00 > 419.00	0 3.631	3.631	0.0		1233751	56.8		114	4623	
29 Perfluorode										
599.00 > 80.00		3.777	0.0	1.000	3485633	47.1		97.7	7297	
D 32 d5-NEtFO 589.00 > 419.00		3.787	0.0		1329627	60.6		121	2607	
31 Perfluorour 563.00 > 519.00		c acid 3.797	0.0	1.000	2345746	47.7		95.4	2789	
33 N-ethyl per										
584.00 > 419.00	0 3.797	3.797	0.0	1.003	1066341	47.2		94.5	5938	
D 30 13C2 PFU		0 =			00000-			- د د	. = - -	
565.00 > 520.00	J 3.797	3.797	0.0		Page 894 of 1	104 ^{58.8}		118	6789	

Report Date: 28-Jul-2017 14:14:28 Cl Data File: \ChromNa\Sacramento\ChromData\A8 Chrom Revision: 2.2 26-Jun-2017 08:09:44

Data File:	ata File: \\ChromNa\Sacramento\ChromData\A8_N\20170728-45994.b\2017.07.27C_012.d									
Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
35 MeFOSA	2.057	2.057	0.0	1 000	0045047	40.0		0/ 5	2020	
512.00 > 169.00 D 34 d-N-MeFO		3.956	0.0	1.000	2245347	48.2		96.5	3929	
515.00 > 169.00		3.956	0.0		2533775	53.8		108	724	
D 36 13C2 PFD		4.000	0.0		04.00007	40.0		00.4	0700	
615.00 > 570.00 37 Perfluorodo		4.088	0.0		2189986	49.0		98.1	2790	
613.00 > 569.00		4.096	0.0	1.000	2083168	51.2		102	1389	
39 N-ethylperflu				1 000	0050047	40.0		07.5	0/40	
526.00 > 169.00 D 38 d-N-EtFOS		4.147	0.0	1.000	2358947	48.8		97.5	3613	
531.00 > 169.00		4.147	0.0		2608860	53.4		107	3154	
41 Perfluorotric 663.00 > 619.00		acid 4.358	0.0	1.000	2005335	53.8		108	507	
42 Perfluorotet			0.0	1.000	2003333	55.0		100	307	
712.50 > 668.90	4.593	4.593	0.0	1.000	4156979	49.4		98.8	207	
713.00 > 169.00		4.593	0.0	1.000	552098		7.53(0.00-0.00)		2835	
D 43 13C2-PFT6 715.00 > 670.00		4.593	0.0		4382835	54.0		108	3423	
D 44 13C2-PFH	xDA									
815.00 > 770.00			0.0		2375604	57.5		115	1696	
45 Perfluorohe: 813.00 > 769.00		oic acid 5.015	0.0	1.000	2186959	62.4		125	356	
46 Perfluorooct										
913.00 > 869.00	5.365	5.365	0.0	1.000	2220674	66.3		133	515	

OC Flag Legend Processing Flags

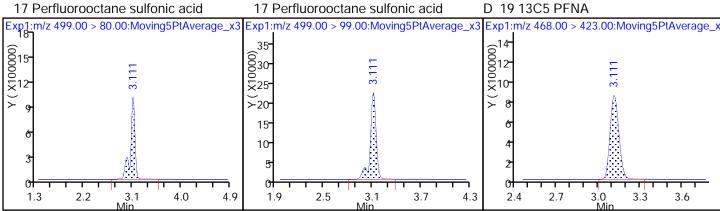
NC - Not Calibrated

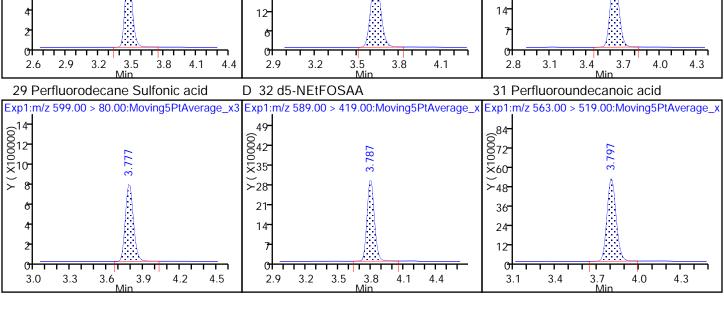
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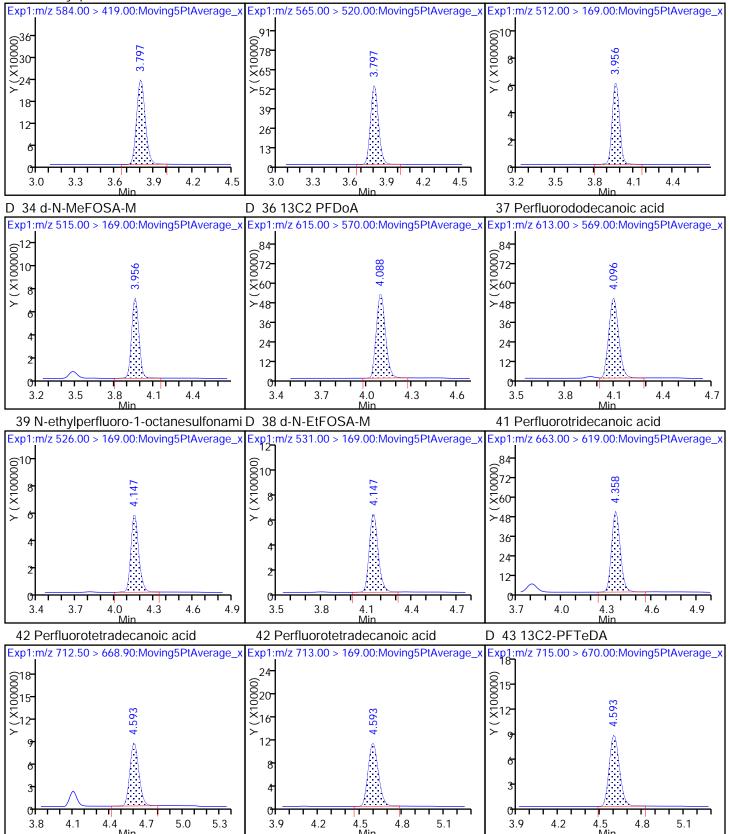
LCPFC_FULL-L5_00005 Amount Added: 1.00 Units: mL

Report Date: 28-Jul-2017 14:14:28 Chrom Revision: 2.2 26-Jun-2017 08:09:44 TestAmerica Sacramento Data File: **Injection Date:** 27-Jul-2017 22:04:44 Instrument ID: A8_N Lims ID: CCV L5 Client ID: Operator ID: SACINSTLCMS01 ALS Bottle#: 32 Worklist Smp#: 12 Injection Vol: 2.0 ul Dil. Factor: 1.0000 Method: Limit Group: LC PFC_DOD ICAL $A8_N$ 2 Perfluorobutyric acid D 113C4 PFBA 4 Perfluoropentanoic acid Exp1:m/z 217.00 > 172.00:Moving5PtAverage_x Exp1:m/z 262.90 > 219.00:Moving5PtAverage_x Exp1:m/z 212.90 > 169.00:Moving5PtAverage_x 630 00 025 <u>8</u>30 18 15 10 12 10 1.8 2.1 1.1 1.4 2.0 1.0 1.3 1.6 1.9 2.2 2.5 5 Perfluorobutanesulfonic acid 5 Perfluorobutanesulfonic acid D 3 13C5-PFPeA Exp1:m/z 267.90 > 223.00:Moving5PtAverage_x Exp1:m/z 298.90 > 80.00:Moving5PtAverage_x3 Exp1:m/z 298.90 > 99.00:Moving5PtAverage_x3 (30° (30° (25° 642 6036 (000018-000015-012-×30∙ 18 10 12 3.0 1.8 2.1 2.4 2.7 0.3 1.2 2.1 2.2 1.2 1.5 0.4 1.0 2.8 61 Sodium 1H,1H,2H,2H-perfluorohexan Perfluorohexanoic acid 7 13C2 PFHxA Exp1:m/z 327.00 > 307.00:Moving5PtAverage_x | Exp1:m/z 313.00 > 269.00:Moving5PtAverage_x Exp1:m/z 315.00 > 270.00:Moving5PtAverage_x (12¹ (0000010) (12¹ ©24 ©20 (000020 ×16 ×₁₆-12 2.8 2.2 2.8 2.0 1.0 1.6 2.2 1.0 1.6 1.4 1.7 2.3 2.6 9 13C4-PFHpA 10 Perfluoroheptanoic acid 8 Perfluorohexanesulfonic acid Exp1:m/z 399.00 > 80.00:Moving5PtAverage_x3 Exp1:m/z 363.00 > 319.00:Moving5PtAverage_x Exp1:m/z 367.00 > 322.00:Moving5PtAverage_x (0000018 (0000015 (x)) 24 (00001 ×16 024 0020 020 12 0 0 0 1.9 Page 896 of 1104 1.8 2.1 2.4 2.7 3.0 1.4 2.0 2.6 3.2 1.5 1.6

Report Date: 28-Jul-2017 14:14:29 Chrom Revision: 2.2 26-Jun-2017 08:09:44 Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170728-45994.b\2017.07.27C_012.d D 11 1802 PFHxS 13 Sodium 1H,1H,2H,2H-perfluoroocta De 12 M2-6:2FTS Exp1:m/z 403.00 > 84.00:Moving5PtAverage_x3 Exp1:m/z 427.00 > 407.00:Moving5PtAverage_x Exp1:m/z 429.00 > 409.00:Moving5PtAverage_x 35 (X) X (X100000) X (X) X 91- (000001X) X) 20 ×65 ≻52 15 39 10 26**-**13 1.9 2.7 2.7 2.2 2.5 2.8 3.1 2.1 2.4 3.0 3.3 2.1 2.4 3.0 3.3 1.6 62 13C2-PFOA 15 Perfluorooctanoic acid 15 Perfluorooctanoic acid Exp1:m/z 415.00 > 370.00:Moving5PtAverage_x Exp1:m/z 413.00 > 369.00:Moving5PtAverage_x Exp1:m/z 413.00 > 169.00:Moving5PtAverage_x (0000018 (000001X)) 12 (0000015 X12 (12⁻ (12000010) (12⁻ \mathbf{o} 2.3 2.9 3.2 2.4 3.3 2.3 2.9 3.2 2.6 3.5 2.1 3.0 2.0 3.5 Min D 14 13C4 PFOA 16 Perfluoroheptanesulfonic Acid 20 Perfluorononanoic acid Exp1:m/z 463.00 > 419.00:Moving5PtAverage_x Exp1:m/z 449.00 > 80.00:Moving5PtAverage_x3 Exp1:m/z 417.00 > 372.00:Moving5PtAverage_x 000024 20000 20 (018⁻ (000015⁻ (12⁻ 0014 00012 X10 ×16 12 1.9 2.2 2.5 2.8 3.4 2.3 2.9 3.5 2.5 2.8 3.7 3.1 1.7 2.2 3.1 3.4 4.0 17 Perfluorooctane sulfonic acid 17 Perfluorooctane sulfonic acid D 19 13C5 PFNA Exp1:m/z 499.00 > 99.00:Moving5PtAverage_x3 Exp1:m/z 468.00 > 423.00:Moving5PtAverage_x 35-

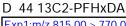






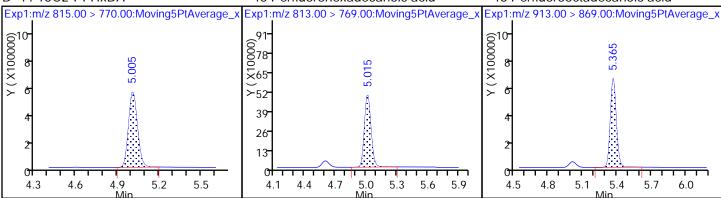
Report Date: 28-Jul-2017 14:14:29 Chrom Revision: 2.2 26-Jun-2017 08:09:44

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170728-45994.b\2017.07.27C_012.d



45 Perfluorohexadecanoic acid

46 Perfluorooctadecanoic acid



FORM VII LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-29732-1

SDG No.:

Lab Sample ID: <u>CCV 320-176487/15</u> Calibration Date: <u>07/27/2017 22:25</u>

Instrument ID: A8_N Calib Start Date: 07/23/2017 13:10

GC Column: GeminiC18 3×100 ID: 3.00 (mm) Calib End Date: 07/23/2017 13:58

Lab File ID: 2017.07.27C_015.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanoic acid (PFBA)	AveID	0.8820	0.9649		21.9	20.0	9.4	25.0
Perfluoropentanoic acid (PFPeA)	AveID	1.042	1.041		20.0	20.0	-0.1	25.0
Perfluorobutanesulfonic acid (PFBS)	AveID	1.489	1.545		18.3	17.7	3.7	25.0
Perfluorohexanoic acid (PFHxA)	AveID	0.9521	0.9278		19.5	20.0	-2.6	25.0
Perfluoroheptanoic acid (PFHpA)	AveID	1.026	1.007		19.6	20.0	-1.9	25.0
Perfluorohexanesulfonic acid (PFHxS)	AveID	1.082	0.9914		16.7	18.2	-8.4	25.0
6:2FTS	AveID	0.8958	0.8626		18.3	19.0	-3.7	25.0
Perfluoroheptanesulfonic Acid (PFHpS)	AveID	1.122	1.240		21.0	19.0	10.5	25.0
Perfluorooctanoic acid (PFOA)	AveID	1.067	1.052		19.7	20.0	-1.4	25.0
Perfluorononanoic acid (PFNA)	AveID	1.018	0.9756		19.2	20.0	-4.2	25.0
Perfluorooctanesulfonic acid (PFOS)	AveID	1.057	1.052		18.5	18.6	-0.5	25.0
8:2FTS	AveID	0.9107	0.9022		19.0	19.2	-0.9	25.0
Perfluorooctane Sulfonamide (FOSA)	AveID	0.9018	0.9255		20.5	20.0	2.6	25.0
Perfluorodecanoic acid (PFDA)	AveID	0.9799	0.9566		19.5	20.0	-2.4	25.0
N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA)	AveID	0.9100	0.9192		20.2	20.0	1.0	25.0
Perfluorodecanesulfonic acid (PFDS)	AveID	0.6225	0.6224		19.3	19.3	-0.0	25.0
N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)	AveID	0.8488	0.8608		20.3	20.0	1.4	25.0
Perfluoroundecanoic acid (PFUnA)	L2ID		1.088		21.1	20.0	5.6	25.0
MeFOSA	AveID	0.9183	0.9093		19.8	20.0	-1.0	25.0
Perfluorododecanoic acid (PFDoA)	AveID	0.9292	0.9671		20.8	20.0	4.1	25.0
N-EtFOSA-M	AveID	0.9274	0.9434		20.3	20.0	1.7	25.0
Perfluorotridecanoic Acid (PFTriA)	AveID	0.8514	0.8846		20.8	20.0	3.9	25.0
Perfluorotetradecanoic acid (PFTeA)	AveID	1.922	1.824		19.0	20.0	-5.1	25.0
Perfluoro-n-hexadecanoic acid (PFHxDA)	L2ID		0.9356		23.0	20.0	14.9	25.0
Perfluoro-n-octadecanoic acid (PFODA)	AveID	0.7652	0.9256		24.2	20.0	21.0	25.0
13C4 PFBA	Ave	156025	204655		65.6	50.0	31.2	50.0
13C5 PFPeA	Ave	110496	147166		66.6	50.0	33.2	50.0
13C2 PFHxA	Ave	101156	140270		69.3	50.0	38.7	50.0
13C4-PFHpA	Ave	83824	125528		74.9	50.0	49.8	50.0
1802 PFHxS	Ave	137438	184352		63.4	47.3	34.1	50.0
M2-6:2FTS	Ave	47560	63655		63.6	47.5	33.8	50.0

FORM VII LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-29732-1

SDG No.:

Lab Sample ID: <u>CCV 320-176487/15</u> Calibration Date: <u>07/27/2017 22:25</u>

Instrument ID: A8_N Calib Start Date: 07/23/2017 13:10

GC Column: GeminiC18 3×100 ID: 3.00 (mm) Calib End Date: 07/23/2017 13:58

Lab File ID: 2017.07.27C_015.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE CF	CF	MIN CF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
13C4 PFOA	Ave	82143	110027		67.0	50.0	33.9	50.0
13C4 PFOS	Ave	108200	128018		56.6	47.8	18.3	50.0
13C5 PFNA	Ave	65740	85832		65.3	50.0	30.6	50.0
13C8 FOSA	Ave	182802	213697		58.5	50.0	16.9	50.0
M2-8:2FTS	Ave	36500	46996		61.7	47.9	28.8	50.0
13C2 PFDA	Ave	55836	71382		63.9	50.0	27.8	50.0
d3-NMeFOSAA	Ave	21732	28005		64.4	50.0	28.9	50.0
13C2 PFUnA	Ave	40729	50596		62.1	50.0	24.2	50.0
d5-NEtFOSAA	Ave	21931	28897		65.9	50.0	31.8	50.0
d-N-MeFOSA-M	Ave	47115	54532		57.9	50.0	15.7	50.0
13C2 PFDoA	Ave	44655	51382		57.5	50.0	15.1	50.0
d-N-EtFOSA-M	Ave	48834	56408		57.8	50.0	15.5	50.0
13C2-PFTeDA	Ave	81216	97684		60.1	50.0	20.3	50.0
13C2-PFHxDA	Ave	41307	49721		60.2	50.0	20.4	50.0

Report Date: 28-Jul-2017 14:14:33 Chrom Revision: 2.2 26-Jun-2017 08:09:44

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170728-45994.b\2017.07.27C_015.d

Lims ID: CCV L4

Client ID:

Sample Type: CCV

Inject. Date: 27-Jul-2017 22:25:26 ALS Bottle#: 31 Worklist Smp#: 15

Injection Vol: 2.0 ul Dil. Factor: 1.0000

Sample Info: CCV L4

Misc. Info.: Plate: 1 Rack: 1

Operator ID: SACINSTLCMS01 Instrument ID: A8_N

Sublist: chrom-A8_N*sub18

Method: \ChromNa\Sacramento\ChromData\A8_N\20170728-45994.b\A8_N.m

Limit Group: LC PFC_DOD ICAL

Last Update: 28-Jul-2017 14:14:33 Calib Date: 23-Jul-2017 13:58:26

Integrator: Picker

Quant Method: Isotopic Dilution Quant By: Initial Calibration

Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20170723-45765.b\2017.07.23ICAL_010.d

Column 1: Det: EXP1

Process Host: XAWRK013

Process Host:	XAWI	RK013								
Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
2 Perfluorobut	yric acid									
212.90 > 169.00	1.562	1.565	-0.003	1.000	3949416	21.9		109	1442	
D 113C4 PFBA										
217.00 > 172.00		1.565	-0.003		10232742	65.6		131	17884	
4 Perfluoroper 262.90 > 219.00		cid 1.784	-0.003	1.000	3063572	20.0		99.9	1443	
D 3 13C5-PFP6		1.704	-0.003	1.000	3003372	20.0		77.7	1443	
267.90 > 223.00		1.784	-0.003		7358315	66.6		133	52173	
D 47 13C3-PFB										
301.90 > 83.00	1.809	1.802	0.007		176021	NC			7858	
5 Perfluorobut										
	1.809	1.812	-0.003	1.000	5034311	18.3	(104	180195	
	1.809	1.812	-0.003	1.000	1828312		2.75(0.00-0.00)		5215	
61 Sodium 1H, 327.00 > 307.00		•	orohexar -0.003	ne 1.000	1132857	18.3		98.1	28206	
6 Perfluorohex			-0.003	1.000	1132037	10.3		90.1	20200	
313.00 > 269.00			-0.003	1.000	2602698	19.5		97.4	4100	
D 7 13C2 PFHx										
315.00 > 270.00		2.054	-0.003		7013501	69.3		139	23960	
10 Perfluorohe	ptanoic a	acid								
363.00 > 319.00	2.380	2.385	-0.005	1.000	2526925	19.6		98.1	1834	
D 9 13C4-PFHp										
367.00 > 322.00			-0.005		6276383	74.9		150	15006	
8 Perfluorohex				1 000	222/212	1/ 7		01 /	2421	
399.00 > 80.00		2.401	-0.005	1.000	3326313	16.7		91.6	2421	
D 11 18O2 PFH 403.00 > 84.00		2.401	-0.005		8719865	63.4		134	13632	
13 Sodium 1H,				e	37.17000	00.1		101	.0002	
427.00 > 407.00		2.711	0.003	1.000	1041018	18.3		96.3	18775	
					Page 903 of 1	104				

Report Date: 28-Jul-2017 14:14:33 Chrom Revision: 2.2 26-Jun-2017 08:09:44 \ChromNa\Sacramento\ChromData\A8_N\20170728-45994.b\2017.07.27C_015.d Data File: **FXP** DLT REL Amount Signal **RT** RT **RT** Response ng/ml Ratio(Limits) %Rec S/N Flags RT D 12 M2-6:2FTS 429.00 > 409.00 2.714 2.711 3023605 63.6 15316 0.003 134 * 62 13C2-PFOA 50.0 415.00 > 370.00 2.735 0.002 5410039 16315 2.733 100 15 Perfluorooctanoic acid 413.00 > 369.00 2.743 2.740 0.003 1.000 2313939 19.7 98.6 382 413.00 > 169.00 2.743 2.740 0.003 1.000 1286751 1.80(0.90-1.10) 4925 D 14 13C4 PFOA 417.00 > 372.00 2.735 2.740 -0.005 5501366 67.0 134 17477 16 Perfluoroheptanesulfonic Acid 449.00 > 80.00 2.743 2.747 -0.004 21.0 13999 1.000 3021620 111 20 Perfluorononanoic acid 463.00 > 419.00 3.112 19.2 3.111 95.8 3306 0.001 1.000 1674803 17 Perfluorooctane sulfonic acid 499.00 > 80.00 3.112 18.5 99.5 6325 3.111 0.001 1.000 2500385 499.00 > 99.00 3.112 3.111 0.001 1.000 533340 4.69(0.90-1.10) 15186 D 19 13C5 PFNA 468.00 > 423.00 3.112 3.111 0.001 4291592 65.3 131 11294 D 18 13C4 PFOS 503.00 > 80.00 3.112 3.111 0.001 6119259 56.6 118 21289 22 Perfluorooctane Sulfonamide 498.00 > 78.00 3.460 20.5 12983 3.454 0.006 1.000 3955356 103 25 Sodium 1H,1H,2H,2H-perfluorodecane 527.00 > 507.00 3.460 3.454 0.006 1.000 812381 19.0 99.1 9635 D 21 13C8 FOSA 506.00 > 78.00 3.460 3.454 0.006 10684835 58.5 117 19168 D 26 M2-8:2FTS 529.00 > 509.00 3.460 0.006 2251085 61.7 16032 3.454 129 24 Perfluorodecanoic acid 3.474 -0.005 1365671 513.00 > 469.00 3.469 1.000 19.5 97.6 4565 D 23 13C2 PFDA 515.00 > 470.00 3.469 3.474 -0.005 3569086 63.9 128 6928 28 N-methyl perfluorooctane sulfonami 570.00 > 419.00 3.629 3.631 -0.002 514828 20.2 101 5357 1.000 D 27 d3-NMeFOSAA 573.00 > 419.00 3.629 129 3.631 -0.002 1400240 64.4 7138 29 Perfluorodecane Sulfonic acid 599.00 > 80.00 3.786 3.777 0.009 1.000 1536105 19.3 100.0 7259 D 32 d5-NEtFOSAA 589.00 > 419.00 3.796 3.787 0.009 1444864 65.9 132 2153 31 Perfluoroundecanoic acid 563.00 > 519.00 3.796 3.797 -0.001 1.000 1101270 21.1 106 1642 33 N-ethyl perfluorooctane sulfonamid 3.797 -0.001 584.00 > 419.00 3.796 20.3 3949 1.000 497477 101 D 30 13C2 PFUnA 565.00 > 520.00 3.796 62.1 3.797 -0.001 2529814 124 5823

35 MeFOSA

512.00 > 169.00 3.957

3.956

0.001

1.000

Page 904 of 1104 19.8

99.0

4159

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170728-45994.b\2017.07.27C_015.d										
Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 34 d-N-MeFO	SA-M									
515.00 > 169.00		3.956	0.001		2726617	57.9		116	717	
D 36 13C2 PFD	οA									
615.00 > 570.00	4.091	4.088	0.003		2569117	57.5		115	2836	
37 Perfluorodo	decanoio	c acid								
613.00 > 569.00	4.091	4.096	-0.005	1.000	993875	20.8		104	710	
39 N-ethylperflu	uoro-1-o	ctanesu	lfonami							
526.00 > 169.00	4.151	4.147	0.004	1.000	1064311	20.3		102	4126	
D 38 d-N-EtFOS										
531.00 > 169.00	4.142	4.147	-0.005		2820380	57.8		116	3193	
41 Perfluorotric										
663.00 > 619.00	4.354	4.358	-0.004	1.000	909017	20.8		104	195	
42 Perfluoroteti										
712.50 > 668.90		4.593	0.002	1.000	1874083	19.0	7 00(0 00 0 00)	94.9	91.4	
713.00 > 169.00		4.593	-0.009	0.998	237333		7.90(0.00-0.00)		1950	
D 43 13C2-PFT		4 502	0.000		4004170	/O 1		120	11/1	
715.00 > 670.00		4.593	0.002		4884179	60.1		120	4161	
D 44 13C2-PFH:		E 00E	0.0		2404020	40.2		120	1540	
815.00 > 770.00		5.005	0.0		2486038	60.2		120	1569	
45 Perfluorohe: 813.00 > 769.00			-0.010	1.000	961505	23.0		115	153	
			-0.010	1.000	901303	23.0		113	133	
46 Perfluorooct 913.00 > 869.00		5.365	0.001	1.000	951221	24.2		121	227	
713.00 > 009.00	5.300	5.305	0.001	1.000	701221	24.2		121	221	
QC Flag Leg	gend									

Processing Flags

NC - Not Calibrated

Reagents:

LCPFC_FULL-L4_00005 Amount Added: 1.00 Units: mL

Report Date: 28-Jul-2017 14:14:33 Chrom Revision: 2.2 26-Jun-2017 08:09:44 TestAmerica Sacramento Data File: **Injection Date:** 27-Jul-2017 22:25:26 Instrument ID: A8_N Lims ID: CCV L4 Client ID: Operator ID: SACINSTLCMS01 ALS Bottle#: 31 Worklist Smp#: 15 Injection Vol: 2.0 ul Dil. Factor: 1.0000 Method: Limit Group: LC PFC_DOD ICAL $A8_N$ 2 Perfluorobutyric acid D 113C4 PFBA 4 Perfluoropentanoic acid Exp1:m/z 217.00 > 172.00:Moving5PtAverage_x Exp1:m/z 262.90 > 219.00:Moving5PtAverage_x Exp1:m/z 212.90 > 169.00:Moving5PtAverage_x (000012 1000012 (0000015- ©42 0036 (X \times_{30} 18 12 1.8 2.1 1.1 1.4 2.0 2.3 1.0 1.3 1.6 1.9 2.2 2.5 5 Perfluorobutanesulfonic acid 5 Perfluorobutanesulfonic acid D 313C5-PFPeA Exp1:m/z 298.90 > 80.00:Moving5PtAverage_x3 Exp1:m/z 298.90 > 99.00:Moving5PtAverage_x3 Exp1:m/z 267.90 > 223.00:Moving5PtAverage_x (00030 X25 (21⁻ (00018⁻ ×15⁻ ×60 ≻20 15 36 24 2.0 2.3 0.3 0.9 2.1 3.3 2.2 1.4 1.7 2.6 2.7 1.3 1.6 1.9 2.5 1.1 1.0 61 Sodium 1H,1H,2H,2H-perfluorohexan& Perfluorohexanoic acid 7 13C2 PFHxA Exp1:m/z 313.00 > 269.00:Moving5PtAverage_; ____ Exp1:m/z 315.00 > 270.00:Moving5PtAverage_x 321 Exp1:m/z 327.00 > 307.00:Moving5PtAverage_x Y (X100000) ©28-©24-649 0042 ×35 \times 20 ≻₂₈ 16 2.8 2.0 1.6 2.2 1.4 1.7 2.3 2.6 1.0 1.6 2.2 2.8 1.0 1.1 8 Perfluorohexanesulfonic acid 10 Perfluoroheptanoic acid D 9 13C4-PFHpA Exp1:m/z 363.00 > 319.00:Moving5PtAverage_> Exp1:m/z 367.00 > 322.00:Moving5PtAverage_x Exp1:m/z 399.00 > 80.00:Moving5PtAverage_x3 (X100000) 8 0024 0020 20 ′16 0 0 1.9 Page 906 of 1104 1.8 2.1 2.4 2.7 3.0 3.3 1.9 2.2 2.5 2.8 3.1 1.5 1.6 1.6

Report Date: 28-Jul-2017 14:14:33 Chrom Revision: 2.2 26-Jun-2017 08:09:44 Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170728-45994.b\2017.07.27C_015.d D 11 1802 PFHxS 13 Sodium 1H,1H,2H,2H-perfluoroocta De 12 M2-6:2FTS Exp1:m/z 427.00 > 407.00:Moving5PtAverage_x Exp1:m/z 403.00 > 84.00:Moving5PtAverage_x3 Exp1:m/z 429.00 > 409.00:Moving5PtAverage_x (X100000) (X1000000) (X1000000) 0030 036 0642 0642 0642 0642 ×₂₄-21 12 2.3 2.9 2.7 1.7 2.0 2.6 1.9 2.2 2.5 2.8 3.1 3.4 2.1 2.4 3.0 3.3 62 13C2-PFOA 15 Perfluorooctanoic acid 15 Perfluorooctanoic acid Exp1:m/z 415.00 > 370.00:Moving5PtAverage_x Exp1:m/z 413.00 > 369.00:Moving5PtAverage_x Exp1:m/z 413.00 > 169.00:Moving5PtAverage_x (21° 00018° 15° 15° 649 642 0678- 1565- ×35 **≻**52 ≻28-39 21 26**-**14 13 2.3 2.9 3.2 2.5 2.8 2.4 3.3 2.6 3.1 3.0 D 14 13C4 PFOA 16 Perfluoroheptanesulfonic Acid 20 Perfluorononanoic acid Exp1:m/z 449.00 > 80.00:Moving5PtAverage_x3 Exp1:m/z 417.00 > 372.00:Moving5PtAverage_x Exp1:m/z 463.00 > 419.00:Moving5PtAverage_> 63 (000012 X) 0021- 0018-×15-0054 ×45 >36 27 18 0 0 2.9 2.0 2.3 2.9 3.2 3.5 2.0 2.3 2.6 2.9 3.2 3.5 3.8 2.6 2.3 2.6 3.2 3.5 17 Perfluorooctane sulfonic acid 17 Perfluorooctane sulfonic acid D 19 13C5 PFNA Exp1:m/z 499.00 > 80.00:Moving5PtAverage_x3 (00015-X)12-(0000012 X) > 9 ()⁷⁰ <u>></u>50 >₄₀

3.2

4.4

2.4

2.7

3.0

3.3

3.6

3.9

30 20 10

1.8

2.4

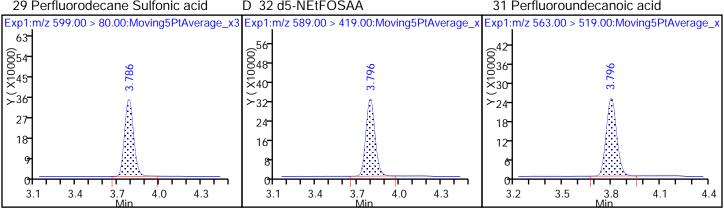
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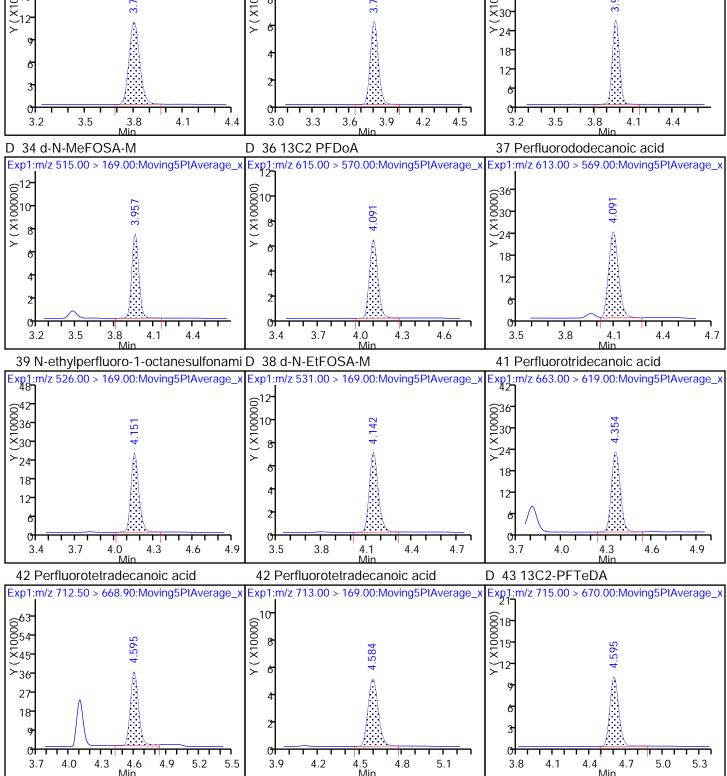
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4.2

0.8

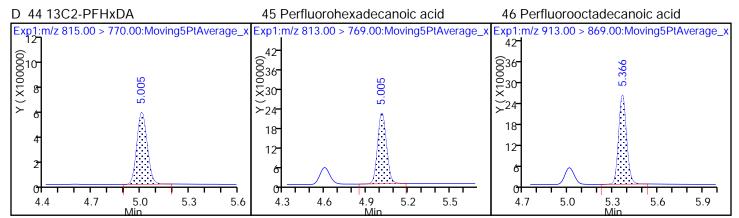
2.0





Report Date: 28-Jul-2017 14:14:33 Chrom Revision: 2.2 26-Jun-2017 08:09:44

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170728-45994.b\2017.07.27C_015.d



FORM I LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento	Job No.: <u>320-29732-1</u>
SDG No.:	
Client Sample ID:	Lab Sample ID: MB 320-174599/1-A
Matrix: Water	Lab File ID: 2017.07.21C_016.d
Analysis Method: 537 (Modified)	Date Collected:
Extraction Method: 3535	Date Extracted: 07/18/2017 07:22
Sample wt/vol: 250(mL)	Date Analyzed: 07/21/2017 20:45
Con. Extract Vol.: 0.50(mL)	Dilution Factor: 1
Injection Volume: 2(uL)	GC Column: GeminiC18 3x100 ID: 3(mm)
% Moisture:	GPC Cleanup:(Y/N) N
Analysis Batch No · 175462	IInits: na/I.

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
375-22-4	Perfluorobutanoic acid (PFBA)	1.0	U M	2.5	1.0	0.46
2706-90-3	Perfluoropentanoic acid (PFPeA)	2.0	Ū	2.5	2.0	0.99
307-24-4	Perfluorohexanoic acid (PFHxA)	2.0	Ū	2.5	2.0	0.79
375-85-9	Perfluoroheptanoic acid (PFHpA)	2.0	U	2.5	2.0	0.80
335-67-1	Perfluorooctanoic acid (PFOA)	2.0	U	2.5	2.0	0.75
375-95-1	Perfluorononanoic acid (PFNA)	2.0	Ü	2.5	2.0	0.65
335-76-2	Perfluorodecanoic acid (PFDA)	1.0	Ū	2.5	1.0	0.44
2058-94-8	Perfluoroundecanoic acid (PFUnA)	2.0	U	2.5	2.0	0.75
307-55-1	Perfluorododecanoic acid (PFDoA)	2.0	Ū	2.5	2.0	0.58
72629-94-8	Perfluorotridecanoic Acid (PFTriA)	0.631	J	2.5	2.0	0.55
376-06-7	Perfluorotetradecanoic acid (PFTeA)	0.711	JМ	2.5	1.0	0.40
375-73-5	Perfluorobutanesulfonic acid (PFBS)	2.0	Ū	2.5	2.0	0.92
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	2.0	Ū	2.5	2.0	0.87
375-92-8	Perfluoroheptanesulfonic Acid (PFHpS)	2.0	U	2.5	2.0	0.71
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	3.0	Ū	4.0	3.0	1.3
335-77-3	Perfluorodecanesulfonic acid (PFDS)	3.0	Ū	4.0	3.0	1.2
754-91-6	Perfluorooctane Sulfonamide (FOSA)	2.0	Ū	40	2.0	0.64

FORM I LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento	Job No.: 320-29732-1
SDG No.:	
Client Sample ID:	Lab Sample ID: MB 320-174599/1-A
Matrix: Water	Lab File ID: 2017.07.21C_016.d
Analysis Method: 537 (Modified)	Date Collected:
Extraction Method: 3535	Date Extracted: 07/18/2017 07:22
Sample wt/vol: 250(mL)	Date Analyzed: 07/21/2017 20:45
Con. Extract Vol.: 0.50(mL)	Dilution Factor: 1
Injection Volume: 2(uL)	GC Column: GeminiC18 3x100 ID: 3(mm)
% Moisture:	GPC Cleanup:(Y/N) N
Analysis Batch No.: 175462	Units: ng/L

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL01056	13C8 FOSA	47		25-150
STL00992	13C4 PFBA	113		25-150
STL00993	13C2 PFHxA	115		25-150
STL00990	13C4 PFOA	136		25-150
STL00995	13C5 PFNA	123		25-150
STL00996	13C2 PFDA	138		25-150
STL00997	13C2 PFUnA	137		25-150
STL00998	13C2 PFDoA	114		25-150
STL00994	1802 PFHxS	111		25-150
STL00991	13C4 PFOS	105		25-150
STL01892	13C4-PFHpA	148		25-150
STL01893	13C5 PFPeA	112		25-150

Report Date: 24-Jul-2017 16:31:30 Chrom Revision: 2.2 26-Jun-2017 08:09:44

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \ChromNa\Sacramento\ChromData\A8_N\20170722-45761.b\2017.07.21C_016.d

Lims ID: MB 320-174599/1-A

Client ID:

Sample Type: MB

Inject. Date: 21-Jul-2017 20:45:25 ALS Bottle#: 13 Worklist Smp#: 2

Injection Vol: 2.0 ul Dil. Factor: 1.0000

Sample Info: mb 320-174599/1-a Misc. Info.: Plate: 1 Rack: 4

Operator ID: SACINSTLCMS01 Instrument ID: A8_N

Method: \ChromNa\Sacramento\ChromData\A8_N\20170722-45761.b\A8_N.m

Limit Group: LC PFC_DOD ICAL

Last Update: 24-Jul-2017 16:31:26 Calib Date: 20-Jul-2017 18:04:17

Integrator: Picker

Quant Method: Isotopic Dilution Quant By: Initial Calibration

Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20170720-45703.b\2017.07.20ICAL_010.d

Column 1: Det: EXP1

Process Host: XAWRK004

First Level Reviewer: chandrasenas Date: 24-Jul-2017 16:05:11

First Level Revie	wer: cha	ındrasen	as		Date:	2	4-Jul-2017 16:05:11			
Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 113C4 PFBA	4									
217.00 > 172.00		1.537	-0.009		10213420	56.7		113	27420	
2 Perfluorobut	yric acid									М
212.90 > 169.00	1.528	1.537	-0.009	1.000	31366	0.1686			9.6	M
D 3 13C5-PFP6	eΑ									
267.90 > 223.00	1.727	1.727	0.0		6673673	55.8		112	41748	
D 47 13C3-PFB	S									
301.90 > 83.00	1.745	1.755	-0.010		168483	NC			5849	
5 Perfluorobut										
298.90 > 80.00		1.755	-0.010	1.000	8417	0.0332			6.4	
298.90 > 99.00		1.755	-0.010	1.000	7345		1.15(0.00-0.00)		5.0	
D 40 d-N-EtFOS		1 00 1	0.400		40.40	NO			4.0	
212.90 > 169.00		1.884	0.190		4343	NC			1.3	
61 Sodium 1H,		•			1001	ND			/2 F	
327.00 > 307.00		1.900	-0.012	1.000	1221	NR			63.5	
D 7 13C2 PFHx 315.00 > 270.00		1.994	0.011		6369807	57.7		115	34313	
			-0.011		0307007	37.7		113	34313	
6 Perfluorohex 313.00 > 269.00		1.994	-0.011	1.000	13855	0.1160			16.4	
D 9 13C4-PFH _k		1.774	0.011	1.000	15055	0.1100			10.4	
367.00 > 322.00		2.316	-0 009		7192040	73.9		148	31406	
10 Perfluorohe			0.007		7.1720.10	70.7			01100	
363.00 > 319.00			-0.009	1.000	14842	0.1022			13.5	
8 Perfluorohex										
399.00 > 80.00		2.324		1.000	33121	0.1814			41.5	
D 11 18O2 PFH	xS									
403.00 > 84.00		2.332	-0.009		8442641	52.7		111	33637	
13 Sodium 1H,	1H,2H,2	H-perflu	orooctan	е						
427.00 > 407.00		2.634	0.004	1.000	Pa@ 943 of 1	104 NR			2086	
					5					

Report Date: 24-Jul-2017 16:31:30 Chrom Revision: 2.2 26-Jun-2017 08:09:44

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170722-45761.b\2017.07.21C_016.d										
Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 12 M2-6:2FTS 429.00 > 409.00		2.634	0.004		5769	0.1097		0.0	412	
* 62 13C2-PFOA 415.00 > 370.00		2.656	-0.004		8235	50.0			282	
D 14 13C4 PFO	A									
417.00 > 372.00 15 Perfluorooct		2.656	0.003		5953513	67.8		136	32917	
413.00 > 369.00 413.00 > 169.00	2.659		-0.004 0.003	1.000 1.003	8586 6149	0.0689	1.40(0.90-1.10)		2.1 40.1	
16 Perfluorohe 449.00 > 80.00	2.667	2.670		1.000	4172	0.0286			154	
20 Perfluorono 463.00 > 419.00	3.022		-0.007	1.000	3609	0.0423			7.9	
D 18 13C4 PFO	3.030	3.029	0.001		5941715	50.3		105	26977	
D 19 13C5 PFNA 468.00 > 423.00	3.030	3.029	0.001		4270711	61.6		123	24088	
D 26 M2-8:2FTS 529.00 > 509.00	3.371	3.372	-0.001		2655	0.0676		0.0	164	
24 Perfluorode 513.00 > 469.00	3.388	3.380	0.008	1.000	5023	0.0642			20.1	
D 23 13C2 PFD, 515.00 > 470.00	3.388	3.380	0.008		4181338	69.1		138	17186	
D 21 13C8 FOS. 506.00 > 78.00	3.388	3.388			4649190	23.7		47.4	15503	
22 Perfluorooct 498.00 > 78.00				1.000	8005	0.0932			183	
28 N-methyl pe 570.00 > 419.00				1.003	2737	NR			26.8	
D 27 d3-NMeFO 573.00 > 419.00		3.543	-0.003		8512	0.3877		0.0	177	
29 Perfluorode 599.00 > 80.00			id 0.006	1.000	4185	0.0529			161	
D 32 d5-NEtFOS 589.00 > 419.00		3.699	0.007		13953	0.6069		0.0	58.4	
31 Perfluoroun 563.00 > 519.00		acid 3.709	-0.003	1.000	11495	0.0147			22.7	
33 N-ethyl perfl 584.00 > 419.00			onamid 0.007	1.003	4558	NR			107	
D 30 13C2 PFUi 565.00 > 520.00		3.709	0.007		2873176	68.4		137	9431	
D 34 d-N-MeFO 515.00 > 169.00		3.886	0.006		2064	0.0409		0.0	2.5	
D 36 13C2 PFD6 615.00 > 570.00		4.004	-0.004		2478978	56.9		114	4833	
37 Perfluorodo 613.00 > 569.00		acid 4.004	0.003	1.000	8006	0.1710			22.0	

Report Date: 24-Jul-2017 16:31:30 Chrom Revision: 2.2 26-Jun-2017 08:09:44 Data File:

RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
A-M									
4.083	4.072	0.011		2540	0.0499		0.0	72.1	
ecanoic	acid								
4.269	4.266	0.003	1.000	13322	0.3157			4.1	
eDA									
4.500	4.498	0.002		5852025	72.0		144	87657	
adecan	oic acid								M
4.509	4.498	0.011	1.000	34289	0.3553			11.0	M
4.500	4.498	0.002	0.998	6115		5.61(0.00-0.00)		294	
κDA									
4.909	4.900	0.009		2193110	51.6		103	3009	
kadecan	oic acid								
4.909	4.910	-0.001	1.000	39824	0.1938			5.3	
	A-M 4.083 ecanoic 4.269 eDA 4.500 radecano 4.509 4.500 kDA 4.909 kadecan	A-M 4.083 4.072 ecanoic acid 4.269 4.266 eDA 4.500 4.498 adecanoic acid 4.509 4.498 4.500 4.498 (DA 4.909 4.900 kadecanoic acid	A-M 4.083 4.072 0.011 ecanoic acid 4.269 4.266 0.003 eDA 4.500 4.498 0.002 adecanoic acid 4.509 4.498 0.011 4.500 4.498 0.002 cDA 4.909 4.900 0.009 cadecanoic acid	A-M 4.083 4.072 0.011 ecanoic acid 4.269 4.266 0.003 1.000 eDA 4.500 4.498 0.002 adecanoic acid 4.509 4.498 0.011 1.000 4.500 4.498 0.002 0.998 eDA 4.909 4.900 0.009 eadecanoic acid	A-M 4.083 4.072 0.011 2540 ecanoic acid 4.269 4.266 0.003 1.000 13322 eDA 4.500 4.498 0.002 5852025 adecanoic acid 4.509 4.498 0.011 1.000 34289 4.500 4.498 0.002 0.998 6115 eDA 4.909 4.900 0.009 2193110 eadecanoic acid	A-M 4.083 4.072 0.011 2540 0.0499 ecanoic acid 4.269 4.266 0.003 1.000 13322 0.3157 eDA 4.500 4.498 0.002 5852025 72.0 adecanoic acid 4.509 4.498 0.011 1.000 34289 0.3553 4.500 4.498 0.002 0.998 6115 eDA 4.909 4.900 0.009 2193110 51.6 eadecanoic acid	A-M 4.083 4.072 0.011 2540 0.0499 ecanoic acid 4.269 4.266 0.003 1.000 13322 0.3157 eDA 4.500 4.498 0.002 5852025 72.0 radecanoic acid 4.509 4.498 0.011 1.000 34289 0.3553 4.500 4.498 0.002 0.998 6115 5.61(0.00-0.00) example of the control of the	A-M 4.083 4.072 0.011 2540 0.0499 0.0 ecanoic acid 4.269 4.266 0.003 1.000 13322 0.3157 DA 4.500 4.498 0.002 5852025 72.0 144 adecanoic acid 4.509 4.498 0.011 1.000 34289 0.3553 4.500 4.498 0.002 0.998 6115 5.61(0.00-0.00) CDA 4.909 4.900 0.009 2193110 51.6 103 eadecanoic acid	A-M 4.083 4.072 0.011 2540 0.0499 0.0 72.1 ecanoic acid 4.269 4.266 0.003 1.000 13322 0.3157 4.1 eDA 4.500 4.498 0.002 5852025 72.0 144 87657 radecanoic acid 4.509 4.498 0.011 1.000 34289 0.3553 4.500 4.498 0.002 0.998 6115 5.61(0.00-0.00) 294 eCDA 4.909 4.900 0.009 2193110 51.6 103 3009 exadecanoic acid

QC Flag Legend Processing Flags

NR - Missing Quant Standard

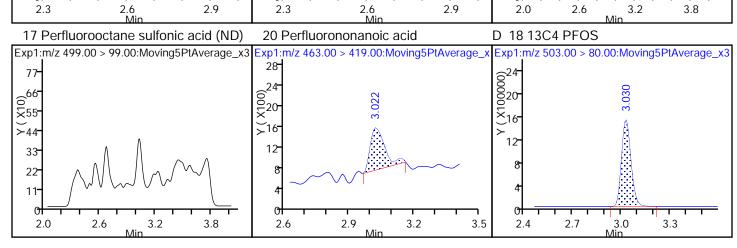
NC - Not Calibrated

Review Flags

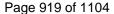
M - Manually Integrated

Report Date: 24-Jul-2017 16:31:30 Chrom Revision: 2.2 26-Jun-2017 08:09:44 TestAmerica Sacramento Data File: \ChromNa\Sacramento\ChromData\A8_N\20170722-45761.b\2017.07.21C_016.d **Injection Date:** 21-Jul-2017 20:45:25 Instrument ID: A8_N Lims ID: MB 320-174599/1-A Client ID: Operator ID: SACINSTLCMS01 ALS Bottle#: 13 Worklist Smp#: 2 Injection Vol: 2.0 ul Dil. Factor: 1.0000 Method: Limit Group: LC PFC_DOD ICAL $A8_N$ D 113C4 PFBA 2 Perfluorobutyric acid (M) D 313C5-PFPeA Exp1:m/z 217.00 > 172.00:Moving5PtAverage_x Exp1:m/z 212.90 > 169.00:Moving5PtAverage_x Exp1:m/z 267.90 > 223.00:Moving5PtAverage_x (000001 (000001 (000001 (000001) 35⁻ 00030 25⁻ 15 (00013 X) X X) 9 528 <u></u>28⁻ ∑20 21 15 10 1.5 1.8 1.9 1.7 2.0 1.2 1.3 1.6 2.2 2.5 5 Perfluorobutanesulfonic acid 4 Perfluoropentanoic acid (ND) 5 Perfluorobutanesulfonic acid Exp1:m/z 262.90 > 219.00:Moving5PtAverage x Exp1:m/z 298.90 > 80.00:Moving5PtAverage x3 Exp1:m/z 298.90 > 99.00:Moving5PtAverage x3 18-10 70 Y (X1000) 600 ×50 **≻**40 30 20 10 1.9 2.5 2.3 1.3 1.7 2.0 1.5 1.8 2.1 0.7 1.1 1.4 1.2 61 Sodium 1H,1H,2H,2H-perfluorohexaDe 7 13C2 PFHxA 6 Perfluorohexanoic acid Exp1:m/z 327.00 > 307.00:Moving5PtAverage_x Exp1:m/z 315.00 > 270.00:Moving5PtAverage_x Exp1:m/z 313.00 > 269.00:Moving5PtAverage_x 00024 00024 1,20 56 63 9⁴⁸ ×40 54 6 ×45 ≻16- -36 -32 27 24 18 16 1.7 2.0 2.3 1.5 1.8 2.1 2.7 1.5 1.8 2.1 2.7 2.4 2.4 8 Perfluorohexanesulfonic acid 9 13C4-PFHpA 10 Perfluoroheptanoic acid Exp1:m/z 367.00 > 322.00:Moving5PtAverage_> Exp1:m/z 363.00 > 319.00:Moving5PtAverage_x Exp1:m/z 399.00 > 80.00:Moving5PtAverage_x3 14 028 024 ©35-× × ≻₁₆-21 12 14 0 0 <u>10</u>4^{2.6} 1.9 2.2 2.5 2.8 1.7 2.9 1.7 2.0 2.3 2.6 2.9 1.6

Report Date: 24-Jul-2017 16:31:30 Chrom Revision: 2.2 26-Jun-2017 08:09:44 Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170722-45761.b\2017.07.21C_016.d D 11 1802 PFHxS 13 Sodium 1H,1H,2H,2H-perfluoroocta De 12 M2-6:2FTS Exp1:m/z 427.00 > 407.00:Moving5PtAverage_x Exp1:m/z 429.00 > 409.00:Moving5PtAverage_x Exp1:m/z 403.00 > 84.00:Moving5PtAverage_x3 0030 036 (24 0001×)16 30 <u>25</u> ∑₂₄- $\stackrel{\cdot}{\succeq}_{20}$ 15 12 10 12 8 2.6 2.9 2.6 2.9 1.9 2.2 2.5 2.8 2.0 2.3 3.2 2.3 1.6 62 13C2-PFOA D 14 13C4 PFOA 15 Perfluorooctanoic acid Exp1:m/z 417.00 > 372.00:Moving5PtAverage_x Exp1:m/z 415.00 > 370.00:Moving5PtAverage_> Exp1:m/z 413.00 > 369.00:Moving5PtAverage_x 80 0024 0000 16 36 670 830 ∑60 $\stackrel{\textstyle \searrow}{\sim}_{24}$ ′16- ≻50 18 12 40 30 20 10 2.9 2.6 2.3 2.9 3.2 2.7 15 Perfluorooctanoic acid 16 Perfluoroheptanesulfonic Acid 17 Perfluorooctane sulfonic acid (ND) Exp1:m/z 413.00 > 169.00:Moving5PtAverage_x Exp1:m/z 449.00 > 80.00:Moving5PtAverage_x3 Exp1:m/z 499.00 > 80.00:Moving5PtAverage_x3 18 18 28 (2) 15 (2) 12 (3) 15 (4 <u>@</u>15 <u>2</u>4 ×20 12 8 0 0



Report Date: 24-Jul-2017 16:31:31 Chrom Revision: 2.2 26-Jun-2017 08:09:44 Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170722-45761.b\2017.07.21C_016.d D 19 13C5 PFNA 25 Sodium 1H,1H,2H,2H-perfluorodecabe2(A)DI)2-8:2FTS Exp1:m/z 527.00 > 507.00:Moving5PtAverage_x | Exp1:m/z 529.00 > 509.00:Moving5PtAverage_x Exp1:m/z 468.00 > 423.00:Moving5PtAverage_x (000015- 660 ×50- >₄₀ 30 20 10 2.3 2.6 2.9 3.2 3.5 3.8 2.3 2.9 3.5 4.1 3.0 3.3 3.6 24 Perfluorodecanoic acid D 23 13C2 PFDA D 21 13C8 FOSA Exp1:m/z 506.00 > 78.00:Moving5PtAverage_x3 Exp1:m/z 513.00 > 469.00:Moving5PtAverage_> Exp1:m/z 515.00 > 470.00:Moving5PtAverage_> (000015 X12 24 820 12 0 3.3 3.0 3.9 3.9 3.3 3.6 3.6 3.0 3.6 28 N-methyl perfluorooctane sulfonamiD 27 d3-NMeFOSAA 22 Perfluorooctane Sulfonamide Exp1:m/z 570.00 > 419.00:Moving5PtAverage_x Exp1:m/z 573.00 > 419.00:Moving5PtAverage_x Exp1:m/z 498.00 > 78.00:Moving5PtAverage_x3 15 00 X 12 36 <u>§</u>30 18 18 12 12 3.3 3.5 3.8 3.4 3.7 3.0 3.6 3.2 4.0 29 Perfluorodecane Sulfonic acid D 32 d5-NEtFOSAA 31 Perfluoroundecanoic acid Exp1:m/z 563.00 > 519.00:Moving5PtAverage_x 66**1** 21 56- 58 <u>8</u>48 <u> 850</u>



4.5

01 - 3.2

3.8

5.0

5.6

4.2

12

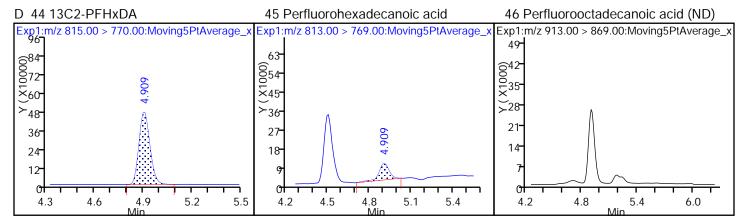
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4.4

4.7

4.8

Report Date: 24-Jul-2017 16:31:31 Chrom Revision: 2.2 26-Jun-2017 08:09:44



Report Date: 24-Jul-2017 16:31:31 Chrom Revision: 2.2 26-Jun-2017 08:09:44 Manual Integration/User Assign Peak Report

TestAmerica Sacramento

Data File: \ChromNa\Sacramento\ChromData\A8_N\20170722-45761.b\2017.07.21C_016.d

Injection Date: 21-Jul-2017 20:45:25 Instrument ID: A8_N

Lims ID: MB 320-174599/1-A

Client ID:

Operator ID: SACINSTLCMS01 ALS Bottle#: 13 Worklist Smp#: 2

Injection Vol: 2.0 ul Dil. Factor: 1.0000

Method: A8_N Limit Group: LC PFC_DOD ICAL

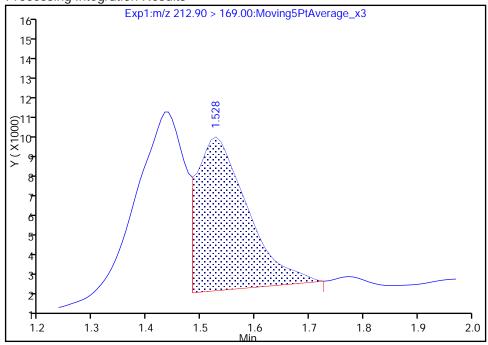
Column: Detector EXP1

2 Perfluorobutyric acid, CAS: 375-22-4

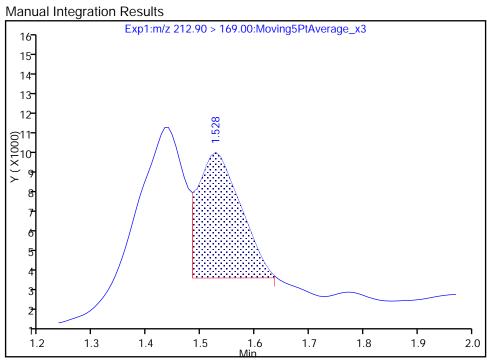
Signal: 1

RT: 1.53
Area: 45334
Amount: 0.243702
Amount Units: ng/ml

Processing Integration Results



RT: 1.53
Area: 31366
Amount: 0.168614
Amount Units: ng/ml



Reviewer: chandrasenas, 24-Jul-2017 16:04:11

Audit Action: Manually Integrated

Audit Reason: Baseline

Report Date: 24-Jul-2017 16:31:31 Chrom Revision: 2.2 26-Jun-2017 08:09:44 Manual Integration/User Assign Peak Report

TestAmerica Sacramento

Data File: \ChromNa\Sacramento\ChromData\A8_N\20170722-45761.b\2017.07.21C_016.d

Injection Date: 21-Jul-2017 20:45:25 Instrument ID: A8_N

Lims ID: MB 320-174599/1-A

Client ID:

Operator ID: SACINSTLCMS01 ALS Bottle#: 13 Worklist Smp#: 2

Injection Vol: 2.0 ul Dil. Factor: 1.0000

Method: A8_N Limit Group: LC PFC_DOD ICAL

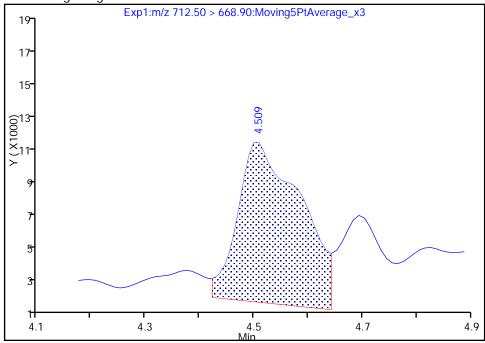
Column: Detector EXP1

42 Perfluorotetradecanoic acid, CAS: 376-06-7

Signal: 1

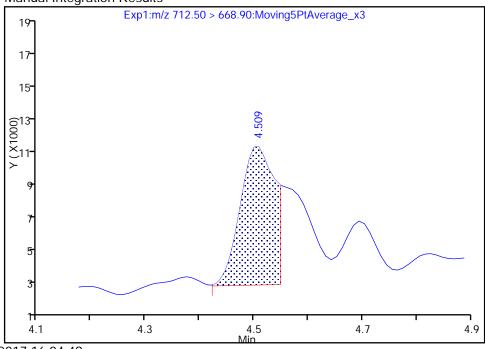
RT: 4.51
Area: 74743
Amount: 0.774380
Amount Units: ng/ml

Processing Integration Results



RT: 4.51
Area: 34289
Amount: 0.355254
Amount Units: ng/ml

Manual Integration Results



Reviewer: chandrasenas, 24-Jul-2017 16:04:49

Audit Action: Manually Integrated

Audit Reason: Baseline

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FORM I LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: Tes	tAmerica Sacramento	Job No	Job No.: 320-29732-1							
SDG No.:										
Client Sample	e ID:	Lab Sa	Lab Sample ID: MB 320-175074/1-A							
Matrix: Water		 Lab Fi	le ID:	2017.07.25	3_002.d					
Analysis Meth	od: 537 (Modified)	 Date C	collecte	d:						
Extraction Me	thod: 3535	 Date E	Extracte	d: 07/20/2	2017 09	:15				
Sample wt/vol	: 250.00(mL)	 Date A	nalyzed	: 07/25/202	17 14:1	7				
Con. Extract	Vol.: 0.50(mL)	 Diluti	Dilution Factor: 1							
Injection Vol	ume: 2(uL)	GC Col	umn: Ge	miniC18 3x	100 ID:	3 (mm)				
% Moisture:		GPC Cl	eanup: (Y/N) N						
Analysis Bato	h No.: 175951	 Units:	ng/L							
CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL				
376-06-7	Perfluorotetradecanoic acid (PFTeA)	0.807	JM	2.5	1.	0.40				
				•		·				
CAS NO.	ISOTOPE DIL	UTION		%REC	Q	LIMITS				
STL00998	13C2 PFDoA			116		25-150				

Report Date: 26-Jul-2017 11:32:40 Chrom Revision: 2.2 26-Jun-2017 08:09:44

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \ChromNa\Sacramento\ChromData\A8_N\20170726-45877.b\2017.07.25B_002.d

Lims ID: MB 320-175074/1-A

Client ID:

Sample Type: MB

Inject. Date: 25-Jul-2017 14:17:41 ALS Bottle#: 1 Worklist Smp#: 2

Injection Vol: 2.0 ul Dil. Factor: 1.0000

Sample Info: mb 320-175074/1-a Misc. Info.: Plate: 1 Rack: 4

Operator ID: SACINSTLCMS01 Instrument ID: A8_N

Method: \ChromNa\Sacramento\ChromData\A8_N\20170726-45877.b\A8_N.m

Limit Group: LC PFC_DOD ICAL

Last Update: 26-Jul-2017 11:32:34 Calib Date: 23-Jul-2017 13:58:26

Integrator: Picker

Quant Method: Isotopic Dilution Quant By: Initial Calibration

Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20170723-45765.b\2017.07.23ICAL_010.d

Column 1: Det: EXP1

Process Host: XAWRK028

First Level Reviewer: chandrasenas Date: 26-Jul-2017 11:05:21

First Level Revie	ewer: cha	ındrasen	ias		Date:	2	26-Jul-2017 11:05:21			
Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 113C4 PFBA										
217.00 > 172.00		1.559	-0.012		9716633	62.3		125	36891	
2 Perfluorobut	tyric acid									M
212.90 > 169.00	1.547	1.559	-0.012	1.000	90439	0.5276			25.3	M
D 3 13C5-PFP	eΑ									
267.90 > 223.00	1.756	1.778	-0.022		7196055	65.1		130	45321	
D 47 13C3-PFB										
301.90 > 83.00		1.797	-0.013		178514	NC			5247	
5 Perfluorobut				1 000	0700	0.0004				
298.90 > 80.00 298.90 > 99.00			-0.022 -0.022	1.000 1.000	8728 7257	0.0331	1.20(0.00-0.00)		6.1 6.9	
					7237		1.20(0.00-0.00)		0.9	
61 Sodium 1H, 327.00 > 307.00		•		1.000	1445	NR			73.5	
D 7 13C2 PFH		2.013	-0.027	1.000	1445	IVIX			73.3	
315.00 > 270.00		2.058	-0.026		6592866	65.2		130	30660	
6 Perfluorohe										
313.00 > 269.00			-0.026	1.000	11738	0.0935			20.8	
D 9 13C4-PFH _I	рΑ									
367.00 > 322.00		2.393	-0.024		6457020	77.0		154	31550	
10 Perfluorohe	eptanoic a	acid								M
363.00 > 319.00	2.369	2.393	-0.024	1.000	5926	0.0447			11.2	M
D 11 18O2 PFH	lxS									
403.00 > 84.00	2.377	2.409	-0.032		8369130	60.9		129	28295	
8 Perfluorohe										
399.00 > 80.00	2.385	2.409	-0.024	1.000	31687	0.1655			48.5	
D 12 M2-6:2FTS										
429.00 > 409.00		2.727			6052	0.1273		0.0	321	
13 Sodium 1H		•			45.47.4	NB				
427.00 > 407.00	2.700	2.734	-0.034	1.000	Pagle \$24 of 1	104 NR			2074	

Data File:	Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170726-45877.b\2017.07.25B_002.d									
Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 14 13C4 PFO	А									
417.00 > 372.00		2.756	-0.027		6034888	73.5		147	31817	
* 62 13C2-PFO	4									
415.00 > 370.00	2.721	2.756	-0.035		7961	50.0			305	
15 Perfluorooc										
413.00 > 369.00			-0.027	1.000	8237	0.0640	4.04(0.00.4.40)		2.4	
413.00 > 169.00			-0.027	1.000	6789		1.21(0.90-1.10)		63.3	
16 Perfluorohe 449.00 > 80.00	•			1.000	3345	0.0228			85.0	
D 19 13C5 PFN		2.703	-0.027	1.000	3343	0.0220			03.0	
468.00 > 423.00		3 131	-0.029		4376362	66.6		133	16533	
D 18 13C4 PFO		0.101	0.027		1070002	00.0		100	10000	
503.00 > 80.00		3.131	-0.029		6244496	57.7		121	23043	
20 Perfluorono										
463.00 > 419.00			-0.038	1.000	3608	0.0405			9.6	
D 21 13C8 FOS	Α									
506.00 > 78.00	3.459	3.487	-0.028		8806889	48.2		96.4	11056	
D 26 M2-8:2FTS	5									
529.00 > 509.00	3.459	3.487	-0.028		2433	0.0667		0.0	95.3	
D 23 13C2 PFD	A									
515.00 > 470.00	3.468	3.497	-0.029		4099486	73.4		147	10159	
22 Perfluorooc										
498.00 > 78.00			-0.038	1.000	8654	0.0545			132	
24 Perfluorode			0.000	1 000	00/0	0.0407			04.0	
513.00 > 469.00		3.497	-0.029	1.000	3269	0.0407			21.3	
D 27 d3-NMeFC 573.00 > 419.00		3.646	0.010		4802	0.2210		0.0	161	
					4002	0.2210		0.0	101	
29 Perfluorode 599.00 > 80.00				1 000	3384	0.0416			131	
D 32 d5-NEtFO		3.003	-0.029	1.000	3304	0.0410			131	
589.00 > 419.00		3 822	-0.038		7158	0.3264		0.0	22.4	
31 Perfluoroun			0.000		7100	0.0201		0.0	22.1	
563.00 > 519.00			-0.028	1.000	10967	0.0730			20.7	
33 N-ethyl perf										
584.00 > 419.00			-0.019	1.005	1947	NR			51.3	
D 30 13C2 PFU	nA									
565.00 > 520.00		3.822	-0.028		2991559	73.4		147	6744	
D 34 d-N-MeFO	SA-M									
515.00 > 169.00	3.952	3.979	-0.027		1714	0.0364		0.0	0.5	
37 Perfluorodo	decanoi	c acid								
613.00 > 569.00	4.087	4.116	-0.029	1.000	3140	0.0655			7.5	
D 36 13C2 PFD	οΑ									
615.00 > 570.00	4.087	4.116	-0.029		2579761	57.8		116	4067	
D 38 d-N-EtFOS	SA-M									
531.00 > 169.00	4.138	4.167	-0.029		2160	0.0442		0.0	51.4	
41 Perfluorotrio										
663.00 > 619.00	4.358	4.380	-0.022	1.000	4722	0.1075			1.2	

Report Date: 26-Jul-2017 11:32:40 Chrom Revision: 2.2 26-Jun-2017 08:09:44 Data File:

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
42 Perfluorotetr										M
712.50 > 668.90		4.614	0.010	1.000	40034	0.4037	7 50/0 00 0 00)		2.5	M
713.00 > 169.00	4.593	4.614	-0.021	0.993	5340		7.50(0.00-0.00)		99.4	
D 43 13C2-PFT										
715.00 > 670.00	4.593	4.614	-0.021		7719137	95.0		190	35151	
45 Perfluorohex	xadecan	oic acid								
813.00 > 769.00	5.010	5.025	-0.015	1.000	51502	0.5948			7.4	
D 44 13C2-PFH	xDA									
815.00 > 770.00	5.010	5.025	-0.015		2521314	61.0		122	3543	
46 Perfluorooct	adecano	oic acid								
913.00 > 869.00	5.245	5.383	-0.138	1.000	5047	0.1278			1.7	

QC Flag Legend Processing Flags

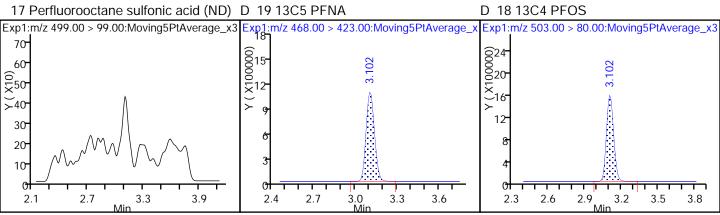
NR - Missing Quant Standard

NC - Not Calibrated

Review Flags

M - Manually Integrated

Report Date: 26-Jul-2017 11:32:41 Chrom Revision: 2.2 26-Jun-2017 08:09:44 TestAmerica Sacramento Data File: \ChromNa\Sacramento\ChromData\A8_N\20170726-45877.b\2017.07.25B_002.d **Injection Date:** 25-Jul-2017 14:17:41 Instrument ID: A8_N Lims ID: MB 320-175074/1-A Client ID: Operator ID: SACINSTLCMS01 ALS Bottle#: Worklist Smp#: 2 2.0 ul Dil. Factor: 1.0000 Injection Vol: Limit Group: LC PFC_DOD ICAL Method: $A8_N$ D 113C4 PFBA 2 Perfluorobutyric acid (M) D 313C5-PFPeA Exp1:m/z 212.90 > 169.00:Moving5PtAverage_x | Exp1:m/z 267.90 > 223.00:Moving5PtAverage_x Exp1:m/z 217.00 > 172.00:Moving5PtAverage_> 35⁻ 00030 25⁻ 000042 00001 35 631 $\stackrel{\smile}{\times}_{26}$ ∑20 21 16 10 11 1.5 1.9 1.5 1.8 1.2 1.8 1.3 2.2 2.5 1.6 5 Perfluorobutanesulfonic acid 5 Perfluorobutanesulfonic acid 4 Perfluoropentanoic acid (ND) Exp1:m/z 262.90 > 219.00:Moving5PtAverage_x Exp1:m/z 298.90 > 80.00:Moving5PtAverage x3 Exp1:m/z 298.90 > 99.00:Moving5PtAverage_x3 21 Y (X1000) 618 0015 ×15 866 ×55 >₄₄ 33 22 11 2.5 1.9 1.9 1.5 1.8 1.6 2.2 1.3 2.1 2.4 1.3 61 Sodium 1H,1H,2H,2H-perfluorohexaDe 7 13C2 PFHxA 6 Perfluorohexanoic acid xp1:m/z 313.00 > 269.00:Moving5PtAverage_x Exp1:m/z 327.00 > 307.00:Moving5PtAverage_x Exp1:m/z 315.00 > 270.00:Moving5PtAverage_) 56 48 848 ²40 × 32 × 32 ×40 \succ_{32} 15 24 24 10 16 1.8 2.1 2.4 1.9 2.8 1.6 2.2 2.5 1.5 1.8 2.1 2.4 1.5 1.3 9 13C4-PFHpA 10 Perfluoroheptanoic acid (M) D 11 1802 PFHxS Exp1:m/z 403.00 > 84.00:Moving5PtAverage_x3 Exp1:m/z 367.00 > 322.00:Moving5PtAverage_x Exp1:m/z 363.00 > 319.00:Moving5PtAverage_ 50 035<u>-</u> 028 024 © 43-× 36-×25 ∑29⁻ ≻₁₆-≻20 22 15 15- 10 0 1 1.9 2.2 2.5 2.8 2.0 2.6 2.0 2.9 2.3 2.6 1.6 1.7 Page 9237 rof 1104



Chrom Revision: 2.2 26-Jun-2017 08:09:44

Report Date: 26-Jul-2017 11:32:41

3.7

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4.0

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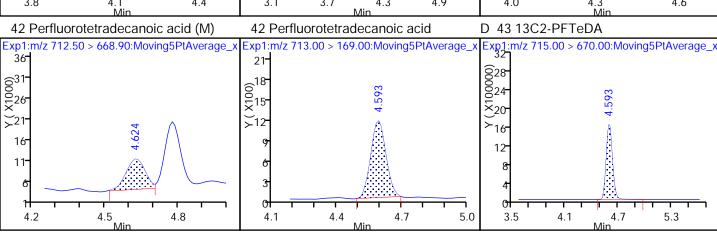
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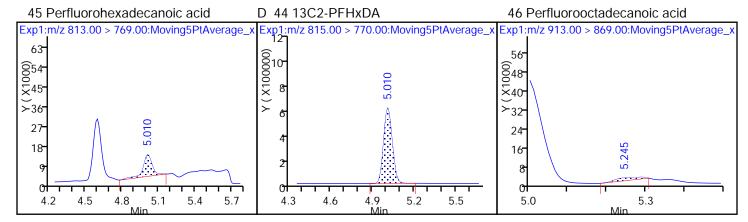
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Report Date: 26-Jul-2017 11:32:41 Chrom Revision: 2.2 26-Jun-2017 08:09:44



Report Date: 26-Jul-2017 11:32:41 Chrom Revision: 2.2 26-Jun-2017 08:09:44 Manual Integration/User Assign Peak Report

TestAmerica Sacramento

Data File: \ChromNa\Sacramento\ChromData\A8_N\20170726-45877.b\2017.07.25B_002.d

Injection Date: 25-Jul-2017 14:17:41 Instrument ID: $A8_N$

Lims ID: MB 320-175074/1-A

Client ID:

Operator ID: SACINSTLCMS01 ALS Bottle#: 1 Worklist Smp#: 2

Injection Vol: 2.0 ul Dil. Factor: 1.0000

Method: A8_N Limit Group: LC PFC_DOD ICAL

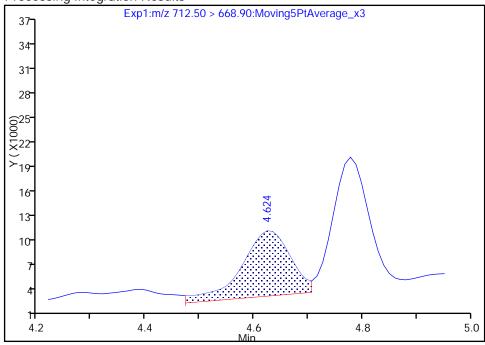
Column: Detector EXP1

42 Perfluorotetradecanoic acid, CAS: 376-06-7

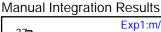
Signal: 1

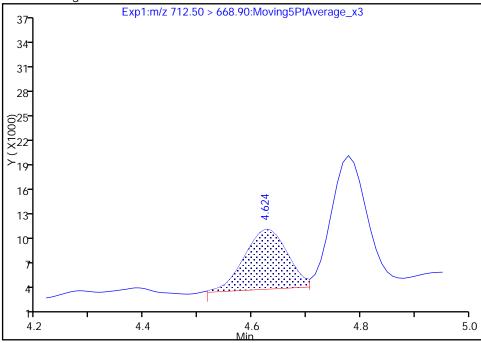
RT: 4.62 Area: 49889 Amount: 0.503075 Amount Units: ng/ml

Processing Integration Results



RT: 4.62 Area: 40034 Amount: 0.403698 Amount Units: ng/ml





Reviewer: chandrasenas, 26-Jul-2017 11:05:03

Audit Action: Manually Integrated

Audit Reason: Baseline

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FORM I LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento	Job No.: <u>320-29732-1</u>
SDG No.:	
Client Sample ID:	Lab Sample ID: MB 320-175097/1-A
Matrix: Water	Lab File ID: 2017.07.23A_002.d
Analysis Method: 537 (Modified)	Date Collected:
Extraction Method: 3535	Date Extracted: 07/20/2017 10:13
Sample wt/vol: 250(mL)	Date Analyzed: 07/23/2017 14:39
Con. Extract Vol.: 0.50(mL)	Dilution Factor: 1
Injection Volume: 2(uL)	GC Column: GeminiC18 3x100 ID: 3(mm)
% Moisture:	GPC Cleanup:(Y/N) N
Analysis Batch No · 175528	Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
375-22-4	Perfluorobutanoic acid (PFBA)	1.0	U	2.5	1.0	0.46
2706-90-3	Perfluoropentanoic acid (PFPeA)	2.0	U	2.5	2.0	0.99
307-24-4	Perfluorohexanoic acid (PFHxA)	2.0	Ū	2.5	2.0	0.79
375-85-9	Perfluoroheptanoic acid (PFHpA)	2.0	Ū	2.5	2.0	0.80
335-67-1	Perfluorooctanoic acid (PFOA)	2.0	Ū	2.5	2.0	0.75
375-95-1	Perfluorononanoic acid (PFNA)	2.0	Ū	2.5	2.0	0.65
335-76-2	Perfluorodecanoic acid (PFDA)	1.0	Ū	2.5	1.0	0.44
2058-94-8	Perfluoroundecanoic acid (PFUnA)	2.0	Ū	2.5	2.0	0.75
307-55-1	Perfluorododecanoic acid (PFDoA)	2.0	Ū	2.5	2.0	0.58
72629-94-8	Perfluorotridecanoic Acid (PFTriA)	2.0	Ū	2.5	2.0	0.55
375-73-5	Perfluorobutanesulfonic acid (PFBS)	2.0	Ū	2.5	2.0	0.92
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	2.0	Ū	2.5	2.0	0.87
375-92-8	Perfluoroheptanesulfonic Acid (PFHpS)	2.0	Ū	2.5	2.0	0.71
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	3.0	Ū	4.0	3.0	1.3
335-77-3	Perfluorodecanesulfonic acid (PFDS)	3.0	Ū	4.0	3.0	1.2
754-91-6	Perfluorooctane Sulfonamide (FOSA)	2.0	U	40	2.0	0.64

FORM I LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-29732-1 SDG No.: Client Sample ID: _____ Lab Sample ID: MB 320-175097/1-A Matrix: Water Lab File ID: 2017.07.23A_002.d Analysis Method: 537 (Modified) Date Collected: ____ Extraction Method: 3535 Date Extracted: 07/20/2017 10:13 Sample wt/vol: 250(mL) Date Analyzed: 07/23/2017 14:39 Con. Extract Vol.: 0.50(mL) Dilution Factor: 1 Injection Volume: 2(uL) GC Column: GeminiC18 3x100 ID: 3(mm) % Moisture: GPC Cleanup:(Y/N) N Analysis Batch No.: 175528 Units: ng/L

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL01056	13C8 FOSA	51		25-150
STL00992	13C4 PFBA	103		25-150
STL00993	13C2 PFHxA	100		25-150
STL00990	13C4 PFOA	110		25-150
STL00995	13C5 PFNA	102		25-150
STL00996	13C2 PFDA	118		25-150
STL00997	13C2 PFUnA	98		25-150
STL00998	13C2 PFDoA	84		25-150
STL00994	1802 PFHxS	96		25-150
STL00991	13C4 PFOS	93		25-150
STL01892	13C4-PFHpA	114		25-150
STL01893	13C5 PFPeA	105		25-150

Report Date: 24-Jul-2017 12:07:21 Chrom Revision: 2.2 26-Jun-2017 08:09:44

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170724-45776.b\2017.07.23A_002.d

Lims ID: MB 320-175097/1-A

Client ID:

Sample Type: MB

Inject. Date: 23-Jul-2017 14:39:50 ALS Bottle#: 1 Worklist Smp#: 2

Injection Vol: 2.0 ul Dil. Factor: 1.0000

Sample Info: mb 320-175097/1-a Misc. Info.: Plate: 1 Rack: 4

Operator ID: SACINSTLCMS01 Instrument ID: A8_N

Method: \ChromNa\Sacramento\ChromData\A8_N\20170724-45776.b\A8_N.m

Limit Group: LC PFC_DOD ICAL

Last Update: 24-Jul-2017 12:07:17 Calib Date: 23-Jul-2017 13:58:26

Integrator: Picker

Quant Method: Isotopic Dilution Quant By: Initial Calibration

Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20170723-45765.b\2017.07.23ICAL_010.d

Column 1: Det: EXP1

Process Host: XAWRK004

First Level Reviewer: chandrasenas Date: 24-Jul-2017 11:57:42

First Level Revie	wer: cha	ndrasen	ias		Date:	2	24-Jul-2017 11:57:42			
Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
2 Perfluorobuty	vric acid									
212.90 > 169.00	•	1.556	-0.009	1.000	29783	0.2109			8.2	
D 113C4 PFBA										
217.00 > 172.00		1.556	0.0		8005223	51.3		103	38206	
D 3 13C5-PFPe	A									
267.90 > 223.00	1.775	1.775	0.0		5774198	52.3		105	57017	
D 47 13C3-PFB	S									
301.90 > 83.00	1.793	1.793	0.0		134843	NC			4414	
5 Perfluorobutanesulfonic acid										
298.90 > 80.00		1.802	-0.009	1.000	7939	0.0403			6.3	
298.90 > 99.00		1.802	-0.009	1.000	7679		1.03(0.00-0.00)		6.0	
6 Perfluorohex										
313.00 > 269.00		2.055	-0.001	1.000	7309	0.0761			15.4	
D 7 13C2 PFHx		0.055	0.001		5045407	40.0		00.0	24/45	
315.00 > 270.00		2.055	-0.001		5045487	49.9		99.8	34645	
10 Perfluorohej 363.00 > 319.00		2.403	0.001	1.000	5592	0.0569			14.1	
		2.403	0.001	1.000	5592	0.0309			14.1	
D 9 13C4-PFHp 367.00 > 322.00		2.403	0.001		4790300	57.1		114	31759	
8 Perfluorohex					4770300	37.1		114	31737	
399.00 > 80.00		2.419	0.001	1.000	24234	0.1691			39.8	
D 11 1802 PFH		2,	0.001	1.000	2.20.	0.1071			07.0	
403.00 > 84.00		2.419	0.001		6264333	45.6		96.4	32074	
13 Sodium 1H,	1H.2H.2	H-perflu	orooctan	e						
427.00 > 407.00		•	0.004	1.000	10440	0.2087			349	
D 12 M2-6:2FTS										
429.00 > 409.00	2.746	2.742	0.004		2652347	55.8		117	33974	
* 62 13C2-PFOA	٨									
415.00 > 370.00	2.768	2.764	0.004		Pag ²⁵ 935 of 1	104 50.0			346	
					-					

Data File:	\\Cnr	omiva\S	acrameni	(O/Chrom	Data\A8_IN\201	70724-4577	6.D\2U17.U7.23A_U	J2.a		
Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
15 Perfluorooct	anoic ac	hic								
413.00 > 369.00		2.771	0.011	1.000	8424	0.0871			2.9	
413.00 > 169.00		2.771	0.004	0.997	5641		1.49(0.90-1.10)		49.9	
D 14 13C4 PFO	Д									
417.00 > 372.00		2.771	0.004		4531496	55.2		110	32316	
16 Perfluoroher										
449.00 > 80.00			0.004	1.000	3709	0.0330			127	
20 Perfluoronor										
463.00 > 419.00		3.151	-0.008	1.000	1933	0.0284			7.0	
D 18 13C4 PFOS		0	0.000			0.020.				
503.00 > 80.00		3.151	0.001		4791520	44.3		92.6	18932	
		0.101	0.001		4771320	44.5		72.0	10732	
D 19 13C5 PFNA 468.00 > 423.00		3.151	0.001		3346390	50.9		102	17256	
		3.131	0.001		3340390	50.9		102	17230	
D 26 M2-8:2FTS		2 407	0.005		2244/27	/1 [100	21868	
529.00 > 509.00		3.497	0.005		2244627	61.5		128	21808	
D 21 13C8 FOSA		0.507			4705007	05.7		-4-	0.457	
506.00 > 78.00					4705396	25.7		51.5	8456	
22 Perfluorooct										
498.00 > 78.00	3.502	3.507	-0.005	1.000	13674	0.1611			146	
D 23 13C2 PFDA	4									
515.00 > 470.00	3.511	3.507	0.004		3283766	58.8		118	8909	
24 Perfluorodeo	canoic a	cid								
513.00 > 469.00	3.521	3.507	0.014	1.000	2635	0.0409			14.1	
D 27 d3-NMeFO	SAA									
573.00 > 419.00	3.669	3.658	0.011		950409	43.7		87.5	8685	
29 Perfluorodeo	cane Su	lfonic ac	id							
599.00 > 80.00			0.007	1.000	2361	0.0378			73.6	
D 32 d5-NEtFOS	SAA									
589.00 > 419.00		3.824	0.007		968085	44.1		88.3	3021	
31 Perfluoround										
563.00 > 519.00		3.833	0.007	1.000	6150	0.0446			18.5	
				1.000	0100	0.0440			10.5	
33 N-ethyl perfl 584.00 > 419.00		3.833		1.002	2498	0.1520			71.4	
		ა.იაა	0.007	1.002	2490	0.1320			71.4	
D 30 13C2 PFUr		2 022	0.007		1000770	40.0		07.0	7005	
565.00 > 520.00		3.833	0.007		1993772	49.0		97.9	7905	
D 34 d-N-MeFOS										
515.00 > 169.00	3.983	3.993	-0.010		3086	0.0655		0.1	1.0	
37 Perfluorodoo										
613.00 > 569.00	4.137	4.123	0.014	1.000	4429	0.1266			2.7	
D 36 13C2 PFDc	ρA									
615.00 > 570.00	4.137	4.123	0.014		1881908	42.1		84.3	5079	
D 38 d-N-EtFOS	A-M									
531.00 > 169.00		4.174	-0.003		2926	0.0599		0.1	13.6	
41 Perfluorotrid	lecanoic	acid								
663.00 > 619.00		4.388	0.008	1.000	4833	0.1508			2.0	
D 43 13C2-PFTe				-	.				-	
715.00 > 670.00		4.619	0.021		6593304	81.2		162	38662	
, 10.00 > 070.00	1.007	1.017	0.021		557550 1	01.2		102	55002	

Report Date: 24-Jul-2017 12:07:21 Chrom Revision: 2.2 26-Jun-2017 08:09:44 Data File:

_											
	Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
	42 Perfluoroteti 712.50 > 668.90 713.00 > 169.00	4.649	oic acid 4.630 4.630	0.019 -0.001	1.000 0.996	47041 5229	0.6503	9.00(0.00-0.00)		3.8 104	M M
8	45 Perfluorohe: 313.00 > 769.00		oic acid 5.030	0.013	1.000	30817	0.3682			7.5	
) 44 13C2-PFH: 315.00 > 770.00		5.030	0.013		1858715	45.0		90.0	5402	
Ç	46 Perfluorooct 913.00 > 869.00		oic acid 5.381	-0.088	1.000	10671	0.3705			4.1	

QC Flag Legend Processing Flags NC - Not Calibrated Review Flags

M - Manually Integrated

Report Date: 24-Jul-2017 12:07:21 Chrom Revision: 2.2 26-Jun-2017 08:09:44 TestAmerica Sacramento Data File: \ChromNa\Sacramento\ChromData\A8_N\20170724-45776.b\2017.07.23A_002.d **Injection Date:** 23-Jul-2017 14:39:50 Instrument ID: A8_N Lims ID: MB 320-175097/1-A Client ID: Operator ID: SACINSTLCMS01 ALS Bottle#: Worklist Smp#: 2 Injection Vol: 2.0 ul Dil. Factor: 1.0000 Method: Limit Group: LC PFC_DOD ICAL $A8_N$ 2 Perfluorobutyric acid D 113C4 PFBA 4 Perfluoropentanoic acid (ND) Exp1:m/z 217.00 > 172.00:Moving5PtAverage_x Exp1:m/z 262.90 > 219.00:Moving5PtAverage_x Exp1:m/z 212.90 > 169.00:Moving5PtAverage_x 10 Y (X1000) <u>666</u> <u>0</u>30 ∑55 18 33 12 22 11 O 1.9 1.4 1.7 2.0 0.8 1.1 1.4 2.0 0.7 1.3 2.5 5 Perfluorobutanesulfonic acid 5 Perfluorobutanesulfonic acid 3 13C5-PFPeA Exp1:m/z 298.90 > 80.00:Moving5PtAverage x3 Exp1:m/z 298.90 > 99.00:Moving5PtAverage_x3 Exp1:m/z 267.90 > 223.00:Moving5PtAverage_x 00024 00024 ×20 84 18 672 ×60 ≻48 36 24 12 1.3 1.9 2.2 2.5 1.5 1.8 2.1 2.4 1.9 2.2 1.6 1.3 61 Sodium 1H,1H,2H,2H-perfluorohexane (Ne) fluorohexanoic acid 7 13C2 PFHxA Exp1:m/z 327.00 > 307.00:Moving5PtAverage_x Exp1:m/z 313.00 > 269.00:Moving5PtAverage_; Exp1:m/z 315.00 > 270.00:Moving5PtAverage_x 42 35 (00020 ×16 36 **630** ×30 ×25 ×24 ≻₂₀ 18 15- 12 10 01 1.6 2.2 1.5 1.8 2.1 1.0 2.8 1.5 1.8 2.1 2.4 2.4 2.7 1.2 10 Perfluoroheptanoic acid 8 Perfluorohexanesulfonic acid 9 13C4-PFHpA Exp1:m/z 363.00 > 319.00:Moving5PtAverage_x Exp1:m/z 367.00 > 322.00:Moving5PtAverage_x Exp1:m/z 399.00 > 80.00:Moving5PtAverage_x3 (21°00018° (21°00018° (21°0018° (21°0018° (21°0018°) 35 (X1000) (X1000) 630 ×25 **≻**20 15 10 0 0 2.4 2.7 1.7 2.9 1.9 2.2 2.5 2.8 2.1 2.0 Page 938 of 1104

Report Date: 24-Jul-2017 12:07:21 Chrom Revision: 2.2 26-Jun-2017 08:09:44 Data File: \ChromNa\Sacramento\ChromData\A8_N\20170724-45776.b\2017.07.23A_002.d D 11 1802 PFHxS 13 Sodium 1H,1H,2H,2H-perfluoroocta De 12 M2-6:2FTS Exp1:m/z 427.00 > 407.00:Moving5PtAverage_x Exp1:m/z 403.00 > 84.00:Moving5PtAverage_x3 Exp1:m/z 429.00 > 409.00:Moving5PtAverage_x 628 0024 (X100000) ×20 ≻28 12 21 14 2.3 2.9 2.7 2.0 2.6 2.3 2.6 2.9 3.2 2.1 2.4 3.0 3.3 1.7 62 13C2-PFOA 15 Perfluorooctanoic acid 15 Perfluorooctanoic acid Exp1:m/z 413.00 > 369.00:Moving5PtAverage_x 801 Exp1:m/z 415.00 > 370.00:Moving5PtAverage_x Exp1:m/z 413.00 > 169.00:Moving5PtAverage_x 35 24 71 <u>ම</u>ි62 <u></u>25 ×53 ≻20 ≻₄₄-15 35 10 26 17-2.7 2.7 3.0 2.8 2.4 3.0 Mir 17 Perfluorooctane sulfonic acid (ND) D 14 13C4 PFOA 16 Perfluoroheptanesulfonic Acid Exp1:m/z 449.00 > 80.00:Moving5PtAverage_x3 Exp1:m/z 417.00 > 372.00:Moving5PtAverage_x Exp1:m/z 499.00 > 80.00:Moving5PtAverage_x3 (000015 X) 12 18 <u>215</u> <u>20</u> 0 2.4 2.7 3.0 3.3 2.8 3.1 2.7 3.3 3.9 2.1 2.5 2.1 D 18 13C4 PFOS 17 Perfluorooctane sulfonic acid (ND) 20 Perfluorononanoic acid Exp1:m/z 499.00 > 99.00:Moving5PtAverage_x3 Exp1:m/z 503.00 > 80.00:Moving5PtAverage_x3 Exp1:m/z 463.00 > 419.00:Moving5PtAverage_x 12 18 (X100) X (X100)

3.2

2.4

2.7

3.0

3.3

3.6

3.9

0

2.9

0

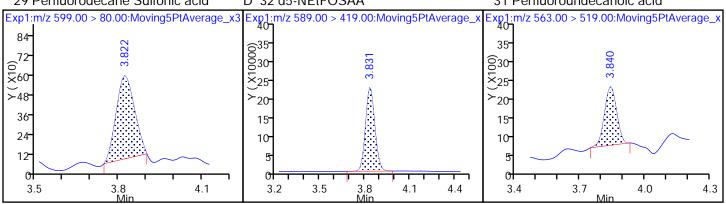
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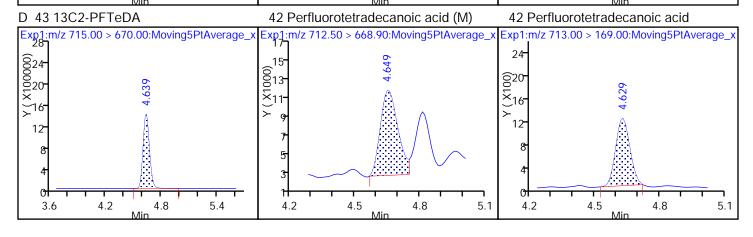
2.7

3.3

3.9

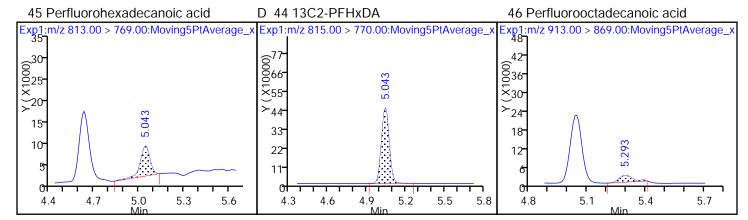
Report Date: 24-Jul-2017 12:07:21 Chrom Revision: 2.2 26-Jun-2017 08:09:44 Data File: \ChromNa\Sacramento\ChromData\A8_N\20170724-45776.b\2017.07.23A_002.d D 19 13C5 PFNA 25 Sodium 1H,1H,2H,2H-perfluorodecabe2(A)DI)2-8:2FTS Exp1:m/z 468.00 > 423.00:Moving5PtAverage_x 91 (X100000) X (X100000) X (X100000) 8 678- ©66 ∑55 ∑65 **≻**44 **≻**52 39 33 22 26 11 13 2.4 2.7 3.0 3.3 3.6 3.9 2.4 3.0 3.6 4.2 2.8 3.1 3.4 3.7 4.0 D 21 13C8 FOSA 22 Perfluorooctane Sulfonamide D 23 13C2 PFDA Exp1:m/z 498.00 > 78.00:Moving5PtAverage_x3 Exp1:m/z 515.00 > 470.00:Moving5PtAverage_> Exp1:m/z 506.00 > 78.00:Moving5PtAverage_x3 618 600 15 000012 1000010 X 48 <u>2</u>40 ∑₁₂ <u></u>32− 24 16 0 3.9 3.1 3.4 3.7 3.3 3.7 4.0 3.6 3.1 4.0 24 Perfluorodecanoic acid D 27 d3-NMeFOSAA 28 N-methyl perfluorooctane sulfonami (ND) Exp1:m/z 513.00 > 469.00:Moving5PtAverage_> Exp1:m/z 573.00 > 419.00:Moving5PtAverage_x Exp1:m/z 570.00 > 419.00:Moving5PtAverage_x 63 18 0030<u>-</u> ⊙⁵⁴ ×45 <u>@</u>15 ∑₁₂ **≻**36 18 27 12 18 0 0 3.5 Mir 3.8 2.9 3.2 3.5 3.8 3.2 3.8 3.2 4.1 4.4 4.4 2.6 29 Perfluorodecane Sulfonic acid D 32 d5-NEtFOSAA 31 Perfluoroundecanoic acid Exp1:m/z 563.00 > 519.00:Moving5PtAverage_> 84 35





Report Date: 24-Jul-2017 12:07:21 Chrom Revision: 2.2 26-Jun-2017 08:09:44

Data File: \ChromNa\Sacramento\ChromData\A8_N\20170724-45776.b\2017.07.23A_002.d



FORM I LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: Tes	stAmerica Sacramento	Job No	·: <u>320-</u>	29732-1						
SDG No.:										
Client Sample	e ID:	Lab Sa	Lab Sample ID: MB 320-175742/1-A							
Matrix: Water	:	Lab Fi	le ID:	2017.07.27	C_002.d					
Analysis Meth	od: 537 (Modified)	Date C	ollecte	d:						
Extraction Me	thod: 3535	Date E	xtracte	d: 07/25/	2017 09:	:12				
Sample wt/vol	: 250.00(mL)	Date A	Date Analyzed: 07/27/2017 20:55							
Con. Extract	Vol.: 0.50(mL)	 Diluti	Dilution Factor: 1							
Injection Vol	ume: 2(uL)	GC Col	umn: Ge	miniC18 3x	100 ID: 3	3 (mm)				
% Moisture:		GPC Cl	eanup: (Y/N) N						
Analysis Bato	ch No.: 176487	Units:	ng/L							
CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL				
754-91-6	Perfluorooctane Sulfonamide (FOSA)	2.0	U	40	2.0	0.64				
CAS NO.	ISOTOPE DILU	JTION		%REC	Q	LIMITS				
STL01056	13C8 FOSA			63		25-150				

Report Date: 28-Jul-2017 14:14:13 Chrom Revision: 2.2 26-Jun-2017 08:09:44

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170728-45994.b\2017.07.27C_002.d

Lims ID: MB 320-175742/1-A

Client ID:

Sample Type: MB

Inject. Date: 27-Jul-2017 20:55:46 ALS Bottle#: 25 Worklist Smp#: 2

Injection Vol: 2.0 ul Dil. Factor: 1.0000

Sample Info: mb 320-175742/1-a Misc. Info.: Plate: 1 Rack: 3

Operator ID: SACINSTLCMS01 Instrument ID: A8_N

Method: \ChromNa\Sacramento\ChromData\A8_N\20170728-45994.b\A8_N.m

Limit Group: LC PFC_DOD ICAL

Last Update: 28-Jul-2017 14:14:10 Calib Date: 23-Jul-2017 13:58:26

Integrator: Picker

Quant Method: Isotopic Dilution Quant By: Initial Calibration

Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20170723-45765.b\2017.07.23ICAL_010.d

Column 1: Det: EXP1

Process Host: XAWRK013

First Level Reviewer: barnettj Date: 28-Jul-2017 13:43:18

First Level Revie	wer: bar	nettj			Date:	2	28-Jul-2017 13:43:18	}		
Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
2 Perfluorobut	vric acid									М
212.90 > 169.00	•	1.565	0.005	1.000	8776	0.0522			2.7	М
D 113C4 PFBA	١									
217.00 > 172.00	1.570	1.565	0.005		9537987	61.1		122	21899	
D 3 13C5-PFPe	eΑ									
267.90 > 223.00	1.789	1.784	0.005		7115090	64.4		129	31865	
D 47 13C3-PFB										
301.90 > 83.00	1.818	1.802	0.016		150598	NC			5526	
5 Perfluorobut										M
298.90 > 80.00		1.812	-0.005	1.000	6977	0.0284	0.00(0.00.0.00)		5.6	
	1.807	1.812	-0.005	1.000	1790		3.90(0.00-0.00)		3.0	M
6 Perfluorohex			0.007	1 000	0174	0.0750			111	
313.00 > 269.00		2.054	0.007	1.000	9174	0.0752			14.1	
D 7 13C2 PFHx 315.00 > 270.00		2.054	0.018		6404232	63.3		127	19951	
10 Perfluorohe			0.010		0404232	03.3		127	17751	N /I
363.00 > 319.00	•	2.385	0.012	1.000	6772	0.0517			7.1	M M
D 9 13C4-PFH _R		2.000	0.012	1.000	0772	0.0017			7.1	141
367.00 > 322.00		2.385	0.012		6377220	76.1		152	16415	
8 Perfluorohex										
399.00 > 80.00		2.401	0.012	1.000	28467	0.1592			43.3	
D 11 18O2 PFH	xS									
403.00 > 84.00		2.401	0.012		7817310	56.9		120	16573	
13 Sodium 1H,	1H,2H,2	H-perflu	orooctan	е						
427.00 > 407.00	2.740	2.711	0.029	1.000	9703	0.1712			315	
D 12 M2-6:2FTS	5									
429.00 > 409.00	2.733	2.711	0.022		3004868	63.2		133	15059	
* 62 13C2-PFO	A									
415.00 > 370.00	2.762	2.733	0.029		Pag ²⁰ 944 of 1	104 50.0			305	

Data File:	\\Chr	omNa\Sa	acramen	to\Chrom	Data\A8_N\201	70728-4599	4.b\2017.07.27C_0	02.d	_	
Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
15 Perfluorooc	tanoic a	rid								
413.00 > 369.00		2.740	0.029	1.000	9470	0.0775			2.0	
413.00 > 169.00		2.740	0.022	0.997	8979	0.0770	1.05(0.90-1.10)		63.9	
D 14 13C4 PFO	A									
417.00 > 372.00	2.762	2.740	0.022		5729057	69.7		139	14895	
16 Perfluorohe	ptanesu	lfonic Ac	id							
449.00 > 80.00	•	2.747		1.000	2811	0.0229			68.7	
D 19 13C5 PFN	A									
468.00 > 423.00	3.136	3.111	0.025		4215066	64.1		128	13231	
D 18 13C4 PFO	S									
503.00 > 80.00	3.136	3.111	0.025		5235428	48.4		101	15022	
22 Perfluorooc										
498.00 > 78.00	3.486	3.454	0.032	1.000	22146	0.2138			250	
D 21 13C8 FOS										
506.00 > 78.00	3.486	3.454	0.032		5742570	31.4		62.8	10157	
D 26 M2-8:2FTS										
529.00 > 509.00	3.486	3.454	0.032		2890718	79.2		165	12787	
24 Perfluorode										M
513.00 > 469.00		3.474	0.021	1.000	2418	0.0300			9.6	M
D 23 13C2 PFD										
515.00 > 470.00		3.474	0.021		4108671	73.6		147	8312	
D 27 d3-NMeFC		0 (01	0.010		11051/0	o		440	2212	
573.00 > 419.00		3.631	0.018		1195468	55.0		110	8869	
D 32 d5-NEtFOS		2 707	0.007		1240102	F/ F		110	22/2	
589.00 > 419.00		3.787	0.027		1240192	56.5		113	3263	
31 Perfluoroun			0.024	1 000	0207	0.0410			14.2	
563.00 > 519.00		3.797	0.026	1.000	9207	0.0618			16.3	
D 30 13C2 PFU		3.797	0.024		2470240	4F 0		132	440E	
565.00 > 520.00		3.191	0.026		2678240	65.8		132	6605	
D 34 d-N-MeFO 515.00 > 169.00		3.956	0.025		3378	0.0717		0.1	1.0	
		3.730	0.023		3370	0.0717		0.1	1.0	
D 36 13C2 PFD6 615.00 > 570.00		4.088	0.027		2469707	55.3		111	4482	
37 Perfluorodo			0.027		2407707	33.3			4402	
613.00 > 569.00		4.096	0.027	1.000	2307	0.0503			2.8	
D 38 d-N-EtFOS		4.070	0.027	1.000	2307	0.0000			2.0	
531.00 > 169.00		4.147	0.019		3959	0.0811		0.2	14.7	
41 Perfluorotrio			0.017		0,0,	0.0011		0.2		
663.00 > 619.00			-0.145	1.000	3774	0.0897			8.0	
D 43 13C2-PFT			01110		0	0.0077			0.0	
715.00 > 670.00		4.593	0.024		6627597	81.6		163	7714	
D 44 13C2-PFH										
815.00 > 770.00		5.005	0.027		2572992	62.3		125	1401	
45 Perfluorohe								-		
813.00 > 769.00		5.015	0.017	1.000	49980	0.6121			4.8	
46 Perfluorooc				-	-					
913.00 > 869.00		5.365	0.015	1.000	7110	0.1881			2.0	

Report Date: 28-Jul-2017 14:14:13

OC Flag Legend
Processing Flags
NC - Not Calibrated
Review Flags

M - Manually Integrated

Chrom Revision: 2.2 26-Jun-2017 08:09:44

Report Date: 28-Jul-2017 14:14:13 Chrom Revision: 2.2 26-Jun-2017 08:09:44 TestAmerica Sacramento Data File: **Injection Date:** 27-Jul-2017 20:55:46 Instrument ID: A8_N Lims ID: MB 320-175742/1-A Client ID: Operator ID: SACINSTLCMS01 ALS Bottle#: 25 Worklist Smp#: 2 Injection Vol: 2.0 ul Dil. Factor: 1.0000 Method: LC PFC_DOD ICAL $A8_N$ Limit Group: 2 Perfluorobutyric acid (M) D 113C4 PFBA 4 Perfluoropentanoic acid (ND) Exp1:m/z 212.90 > 169.00:Moving5PtAverage_x Exp1:m/z 217.00 > 172.00:Moving5PtAverage_x Exp1:m/z 262.90 > 219.00:Moving5PtAverage_x (000001X) 30-(X1000) 10⁻ X (X1000) 18 12 1.3 1.6 1.8 0.7 1.3 1.9 2.5 D 313C5-PFPeA 5 Perfluorobutanesulfonic acid 5 Perfluorobutanesulfonic acid (M) Exp1:m/z 267.90 > 223.00:Moving5PtAverage_> Exp1:m/z 298.90 > 80.00:Moving5PtAverage_x3 Exp1:m/z 298.90 > 99.00:Moving5PtAverage x3 44 ©30 00 25 Y (X1000) 638 ×32 **≻**26' 15 20 1.807 10 14 2.1 1.9 2.2 1.8 1.3 1.6 1.5 1.5 1.8 2.1 61 Sodium 1H,1H,2H,2H-perfluorohexan&(RD) luorohexanoic acid 7 13C2 PFHxA Exp1:m/z 327.00 > 307.00:Moving5PtAverage_x Exp1:m/z 313.00 > 269.00:Moving5PtAverage_x Exp1:m/z 315.00 > 270.00:Moving5PtAverage_x 28 0024 0024 20 56 56 6⁴⁸ ×40 **⊙**48 ×40 >32 ≻₃₂-×16⁻ 24 24 16 16 01 2.2 2.8 1.9 2.2 2.5 1.5 1.8 2.1 1.0 1.6 2.4 2.7 1.6 10 Perfluoroheptanoic acid (M) 9 13C4-PFHpA 8 Perfluorohexanesulfonic acid Exp1:m/z 399.00 > 80.00:Moving5PtAverage_x3 Exp1:m/z 363.00 > 319.00:Moving5PtAverage_x Exp1:m/z 367.00 > 322.00:Moving5PtAverage_> 28 41 000024 00001 X <u>0</u>12 ³⁶ 231 - 31 - 31 - 31 ∑16⁻ -26 12 21 16 11-0 6 0 2.4 2.7 1.7 2.9 1.9 2.2 2.5 2.8 2.1 2.0 Page 947 rof 1104

Report Date: 28-Jul-2017 14:14:13 Chrom Revision: 2.2 26-Jun-2017 08:09:44 Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170728-45994.b\2017.07.27C_002.d D 11 1802 PFHxS 13 Sodium 1H,1H,2H,2H-perfluoroocta De 12 M2-6:2FTS Exp1:m/z 427.00 > 407.00:Moving5PtAverage_x Exp1:m/z 403.00 > 84.00:Moving5PtAverage_x3 Exp1:m/z 429.00 > 409.00:Moving5PtAverage_x (35⁻ 00030 (X100000) 0035 × × × × ×25 ≻20 21 15 14 10 2.4 2.7 2.7 2.7 1.8 2.1 3.0 2.1 2.4 3.0 3.3 2.1 2.4 3.0 3.3 62 13C2-PFOA 15 Perfluorooctanoic acid 15 Perfluorooctanoic acid Exp1:m/z 415.00 > 370.00:Moving5PtAverage_x Exp1:m/z 413.00 > 369.00:Moving5PtAverage_x Exp1:m/z 413.00 > 169.00:Moving5PtAverage_x 42 97 36 ©30 ×30 ×24 **685 6**36 ×30 ×73 ≻61 **≻**24 18 18 49 12 37 12 25 13 2.7 3.0 2.8 2.7 3.0 Mir D 14 13C4 PFOA 16 Perfluoroheptanesulfonic Acid 20 Perfluorononanoic acid (ND) Exp1:m/z 449.00 > 80.00:Moving5PtAverage_x3 Exp1:m/z 417.00 > 372.00:Moving5PtAverage_x Exp1:m/z 463.00 > 419.00:Moving5PtAverage_x 21 0021- 0018-×15-618 ×15 <u>@</u>12 ×10 0 0 2.7 2.4 3.0 3.3 3.1 2.7 3.3 3.9 2.5 2.8 2.1 2.1 17 Perfluorooctane sulfonic acid (ND) 17 Perfluorooctane sulfonic acid (ND) D 19 13C5 PFNA Exp1:m/z 499.00 > 80.00:Moving5PtAverage_x3 Exp1:m/z 499.00 > 99.00:Moving5PtAverage_x3 Exp1:m/z 468.00 > 423.00:Moving5PtAverage_x3 21 (0000015⁻12 (18⁻ (00) (15⁻ (2) (12⁻ <u>@</u>36 ×30-**≻**24

3.3

3.9

2.4

2.7

3.0

3.3

3.6

3.9

О

2.1

2.7

18-

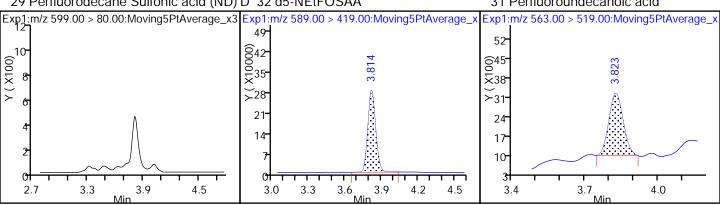
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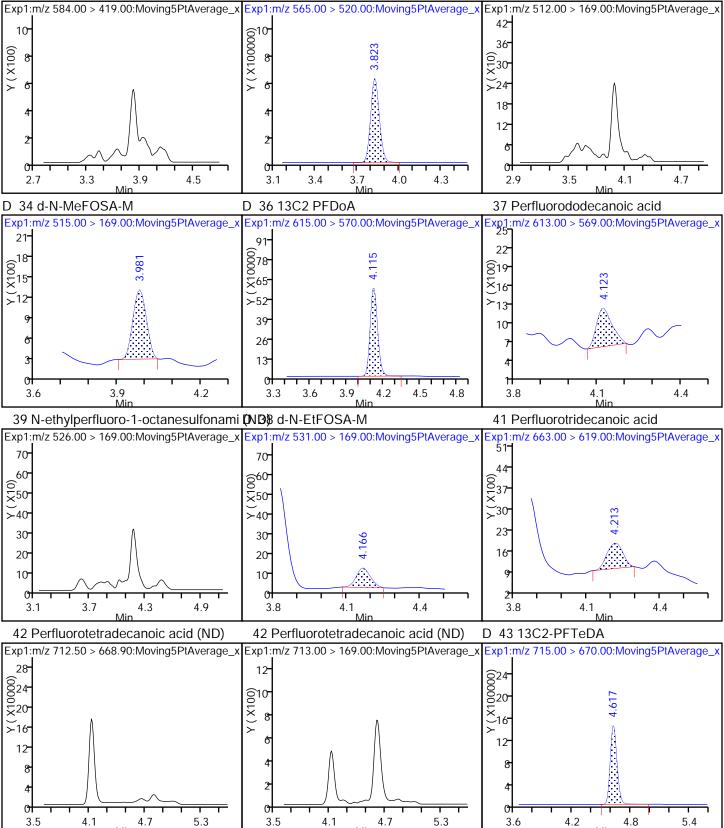
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2.7

3.3

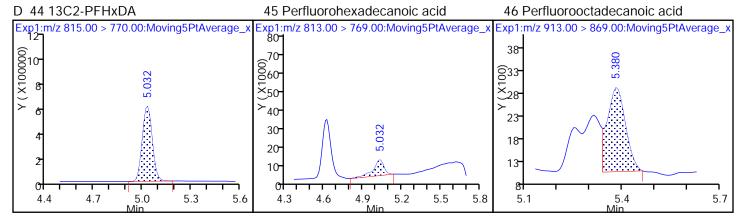
3.9





Report Date: 28-Jul-2017 14:14:13 Chrom Revision: 2.2 26-Jun-2017 08:09:44

 $Data\ File: \verb|\ChromNa| Sacramento| ChromData | A8_N | 20170728-45994.b | 2017.07.27C_002.d | A8_N | A8_N$



FORM I LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento	Job No.: 320-29732-1
SDG No.:	
Client Sample ID:	Lab Sample ID: LCS 320-174599/2-A
Matrix: Water	Lab File ID: 2017.07.21C_017.d
Analysis Method: 537 (Modified)	Date Collected:
Extraction Method: 3535	Date Extracted: 07/18/2017 07:22
Sample wt/vol: 250(mL)	Date Analyzed: 07/21/2017 20:52
Con. Extract Vol.: 0.50(mL)	Dilution Factor: 1
Injection Volume: 2(uL)	GC Column: GeminiC18 3x100 ID: 3(mm)
% Moisture:	GPC Cleanup: (Y/N) N
Analysis Batch No.: 175462	Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
375-22-4	Perfluorobutanoic acid (PFBA)	44.8		2.5	1.0	0.46
2706-90-3	Perfluoropentanoic acid (PFPeA)	42.2		2.5	2.0	0.99
307-24-4	Perfluorohexanoic acid (PFHxA)	42.7		2.5	2.0	0.79
375-85-9	Perfluoroheptanoic acid (PFHpA)	40.6		2.5	2.0	0.80
335-67-1	Perfluorooctanoic acid (PFOA)	42.1		2.5	2.0	0.75
375-95-1	Perfluorononanoic acid (PFNA)	42.6		2.5	2.0	0.65
335-76-2	Perfluorodecanoic acid (PFDA)	43.8		2.5	1.0	0.44
2058-94-8	Perfluoroundecanoic acid (PFUnA)	43.8		2.5	2.0	0.75
307-55-1	Perfluorododecanoic acid (PFDoA)	43.5		2.5	2.0	0.58
72629-94-8	Perfluorotridecanoic Acid (PFTriA)	43.4		2.5	2.0	0.55
376-06-7	Perfluorotetradecanoic acid (PFTeA)	48.6		2.5	1.0	0.40
375-73-5	Perfluorobutanesulfonic acid (PFBS)	38.5		2.5	2.0	0.92
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	38.9		2.5	2.0	0.87
375-92-8	Perfluoroheptanesulfonic Acid (PFHpS)	44.7		2.5	2.0	0.71
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	40.0		4.0	3.0	1.3
335-77-3	Perfluorodecanesulfonic acid (PFDS)	39.6		4.0	3.0	1.2
754-91-6	Perfluorooctane Sulfonamide (FOSA)	42.9		40	2.0	0.64

FORM I LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento	Job No.: 320-29732-1
SDG No.:	
Client Sample ID:	Lab Sample ID: LCS 320-174599/2-A
Matrix: Water	Lab File ID: 2017.07.21C_017.d
Analysis Method: 537 (Modified)	Date Collected:
Extraction Method: 3535	Date Extracted: 07/18/2017 07:22
Sample wt/vol: 250(mL)	Date Analyzed: 07/21/2017 20:52
Con. Extract Vol.: 0.50(mL)	Dilution Factor: 1
Injection Volume: 2(uL)	GC Column: GeminiC18 3x100 ID: 3(mm)
% Moisture:	GPC Cleanup:(Y/N) N
Analysis Batch No.: 175462	Units: ng/L

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL01056	13C8 FOSA	17	Q	25-150
STL00992	13C4 PFBA	100		25-150
STL00993	13C2 PFHxA	102		25-150
STL00990	13C4 PFOA	119		25-150
STL00995	13C5 PFNA	109		25-150
STL00996	13C2 PFDA	126		25-150
STL00997	13C2 PFUnA	110		25-150
STL00998	13C2 PFDoA	97		25-150
STL00994	1802 PFHxS	97		25-150
STL00991	13C4 PFOS	93		25-150
STL01892	13C4-PFHpA	135		25-150
STL01893	13C5 PFPeA	101		25-150

Report Date: 24-Jul-2017 16:31:34 Chrom Revision: 2.2 26-Jun-2017 08:09:44

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170722-45761.b\2017.07.21C_017.d

Lims ID: LCS 320-174599/2-A

Client ID:

Sample Type: LCS

Inject. Date: 21-Jul-2017 20:52:19 ALS Bottle#: 14 Worklist Smp#: 3

Injection Vol: 2.0 ul Dil. Factor: 1.0000

Sample Info: lcs 320-174599/2-a Misc. Info.: Plate: 1 Rack: 4

Operator ID: SACINSTLCMS01 Instrument ID: A8_N

Method: \ChromNa\Sacramento\ChromData\A8_N\20170722-45761.b\A8_N.m

Limit Group: LC PFC_DOD ICAL

Last Update: 24-Jul-2017 16:31:26 Calib Date: 20-Jul-2017 18:04:17

Integrator: Picker

Quant Method: Isotopic Dilution Quant By: Initial Calibration

Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20170720-45703.b\2017.07.20ICAL_010.d

Column 1: Det: EXP1

Process Host: XAWRK004

First Level Reviewer: chandrasenas Date: 24-Jul-2017 16:05:22

I II St Leve	I IVENIEN	vei. ciia	Hurasei	ias		Date.		.4-Jul-2017 10.05.22	•		
Sign	al	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 113C4	4 PFBA										
217.00 >			1.537	-0.001		8968933	49.8		99.7	27387	
2 Perflu 212.90 >	•		1.537	-0.001	1.000	3656289	22.4		112	1744	
D 3 13C5			1.007	0.001	1.000	0000207				.,	
267.90 > 3			1.727	0.009		6039692	50.5		101	44234	
4 Perflu 262.90 > 1	•		cid 1.737	0.0	1.000	2544828	21.1		106	1563	
D 47 13C			11707	0.0	1.000	2011020	2		100	1000	
301.90 >				-0.001		145007	NC			5046	
5 Perflu 298.90 > 3			nic acid 1.755	-0.001	1.000	4258863	19.3		109	2955	
298.90 >				-0.001	1.000	1611374	17.0	2.64(0.00-0.00)	107	2143	
D 7 13C2			1 004	0.0		5/57//0	F4 0		100	22447	
315.00 > 3 6 Perflu			1.994	0.0		5657669	51.2		102	33446	
313.00 > 3			1.994	0.0	1.000	2265691	21.4		107	4417	
D 9 13C4	•		2.217	0.004		/55/0//	/7.4		105	27000	
367.00 > 10 Perflu				-0.004		6556866	67.4		135	37909	
363.00 >				-0.004	1.000	2687876	20.3		102	5511	
8 Perflu					1 000	2007/00	10.5		107	0744	
399.00 > 8 D 11 18O			2.324	0.004	1.000	3097609	19.5		107	2714	
403.00 >			2.332	-0.004		7358161	45.9		97.0	33429	
D 14 13C			2/5/	0.002		F240121	F0.7		110	25220	
417.00 > 3	3/2.00	2.659	2.656	0.003		5240131	59.7		119	35239	

Data File:	\\Chr	omNa\Sa	acrament	to\Chrom	Data\A8_N\201	70722-4576	1.b\2017.07.21C_0	17.d		
Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
			1(1	1(1	Тоэропэс	119/1111	Ratio(Eirints)	701100	3/11	1 lugs
15 Perfluorooct 413.00 > 369.00		2.663	-0.004	1.000	2307126	21.0		105	573	
413.00 > 169.00		2.663	-0.004	1.000	1419476	21.0	1.63(0.90-1.10)	103	6500	
16 Perfluorohe	ptanesul	lfonic Ac	id				,			
449.00 > 80.00	-		-0.004	1.000	2894834	22.4		117	22142	
17 Perfluorooct										
499.00 > 80.00		3.029	0.004	1.000	2278905	20.0	4.05(0.00.4.40)	108	11045	
499.00 > 99.00		3.029	-0.005	0.997	470070		4.85(0.90-1.10)		3010	
20 Perfluorono 463.00 > 419.00		3.029	0.004	1.000	1602516	21.3		106	3800	
D 18 13C4 PFO		3.027	0.004	1.000	1002310	21.5		100	3000	
503.00 > 80.00		3.029	-0.005		5271211	44.7		93.4	30658	
D 19 13C5 PFN	A									
468.00 > 423.00	3.024	3.029	-0.005		3765222	54.3		109	22225	
24 Perfluorode										
513.00 > 469.00		3.380	0.001	1.000	1559293	21.9		110	5675	
D 23 13C2 PFD		2 200	0.001		2000172	(0.0		10/	47007	
515.00 > 470.00		3.380	0.001		3800172	62.8		126	17207	
D 21 13C8 FOS. 506.00 > 78.00		3.388	0.001		1694412	8.63		17.3	12110	
22 Perfluorooct					1074412	0.03		17.5	12110	
498.00 > 78.00		3.388	0.001	1.000	670908	21.4		107	9121	
29 Perfluorode		Ifonic ac	id							
599.00 > 80.00	3.690	3.690	0.0	1.000	1392034	19.8		103	10701	
31 Perfluoroun										
563.00 > 519.00		3.709	0.0	1.000	1025597	21.9		109	1846	
D 30 13C2 PFUi										
565.00 > 520.00		3.709	0.0		2310729	55.0		110	8373	
D 36 13C2 PFD6 615.00 > 570.00		4.004	-0.008		2104570	48.3		96.6	4906	
37 Perfluorodo			-0.008		2104570	40.3		90.0	4900	
613.00 > 569.00		4.004	-0.001	1.000	863821	21.7		109	2182	
41 Perfluorotrio			0.00.							
663.00 > 619.00			-0.001	1.000	778174	21.7		109	320	
D 43 13C2-PFT	eDA									
715.00 > 670.00	4.497	4.498	-0.001		5189057	63.8		128	15169	
42 Perfluoroteti										
712.50 > 668.90		4.498	-0.001	1.000	1993142	24.3	7 00/0 00 0 00)	122	758	
713.00 > 169.00		4.498	-0.001	1.000	273437		7.29(0.00-0.00)		7838	
D 44 13C2-PFH: 815.00 > 770.00		4 000	0.006		107/607	46.5		93.0	3241	
45 Perfluorohe:		4.900	0.006		1974687	40.3		73.0	JZ4 I	
813.00 > 769.00		4.910		1.000	750526	20.2		101	119	
46 Perfluorooct				11000	. 50020				,	
913.00 > 869.00		5.243	-0.003	1.000	607606	16.4		82.1	320	

Chrom Revision: 2.2 26-Jun-2017 08:09:44

Report Date: 24-Jul-2017 16:31:34

OC Flag Legend
Processing Flags
NC - Not Calibrated

Report Date: 24-Jul-2017 16:31:34 Chrom Revision: 2.2 26-Jun-2017 08:09:44 TestAmerica Sacramento Data File: \ChromNa\Sacramento\ChromData\A8_N\20170722-45761.b\2017.07.21C_017.d **Injection Date:** 21-Jul-2017 20:52:19 Instrument ID: A8_N Lims ID: LCS 320-174599/2-A Client ID: Operator ID: SACINSTLCMS01 ALS Bottle#: 14 Worklist Smp#: 3 Injection Vol: 2.0 ul Dil. Factor: 1.0000 Method: Limit Group: LC PFC_DOD ICAL $A8_N$ 2 Perfluorobutyric acid D 113C4 PFBA D 313C5-PFPeA Exp1:m/z 217.00 > 172.00:Moving5PtAverage_x Exp1:m/z 212.90 > 169.00:Moving5PtAverage_x Exp1:m/z 267.90 > 223.00:Moving5PtAverage_x 042 036 ∑30 18 10 12 1.2 2.0 2.0 1.5 5 Perfluorobutanesulfonic acid 5 Perfluorobutanesulfonic acid 4 Perfluoropentanoic acid Exp1:m/z 262.90 > 219.00:Moving5PtAverage_x Exp1:m/z 298.90 > 80.00:Moving5PtAverage_x3 Exp1:m/z 298.90 > 99.00:Moving5PtAverage_x3 77 (0000012 X) X ©21**-**0218-0066 ×55 22 11 2.3 2.0 2.0 2.3 1.5 1.8 1.4 1.4 2.1 2.4 1.1 1.2 7 13C2 PFHxA 6 Perfluorohexanoic acid 9 13C4-PFHpA Exp1:m/z 315.00 > 270.00:Moving5PtAverage_x Exp1:m/z 313.00 > 269.00:Moving5PtAverage_ Exp1:m/z 367.00 > 322.00:Moving5PtAverage_x Y (X100000) 28 024 0020 0024 0024 20 16 1.8 2.1 0.9 1.5 2.1 1.9 1.5 2.4 2.7 2.5 2.8 1.6 10 Perfluoroheptanoic acid 8 Perfluorohexanesulfonic acid D 11 1802 PFHxS Exp1:m/z 363.00 > 319.00:Moving5PtAverage_x Exp1:m/z 399.00 > 80.00:Moving5PtAverage_x3 Exp1:m/z 403.00 > 84.00:Moving5PtAverage_x3 (X100000) 8 15 10 0| 1.7 2.0 2.3 2.6 2.9 3.2 1.9 2.2 2.5 2.8 1.4 1.6

Report Date: 24-Jul-2017 16:31:34 Chrom Revision: 2.2 26-Jun-2017 08:09:44 Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170722-45761.b\2017.07.21C_017.d D 14 13C4 PFOA 15 Perfluorooctanoic acid 15 Perfluorooctanoic acid Exp1:m/z 417.00 > 372.00:Moving5PtAverage_x Exp1:m/z 413.00 > 369.00:Moving5PtAverage_x Exp1:m/z 413.00 > 169.00:Moving5PtAverage_x Y (X100000) (21- 000018-15-656**-**60648**-**×40 24 16 2.2 2.6 1.9 2.5 2.8 3.1 3.4 2.2 2.5 2.8 2.0 2.3 2.9 3.2 16 Perfluoroheptanesulfonic Acid 17 Perfluorooctane sulfonic acid 17 Perfluorooctane sulfonic acid Exp1:m/z 449.00 > 80.00:Moving5PtAverage_x3 Exp1:m/z 499.00 > 80.00:Moving5PtAverage_x3 Exp1:m/z 499.00 > 99.00:Moving5PtAverage_x3 (0000012 (000001X) × 8 18 0015 00015 ×12 ∑50 **≻**40 30 20 10 0 2.7 2.4 3.0 2.4 3.3 4.2 1.9 2.5 3.7 3.1 20 Perfluorononanoic acid D 18 13C4 PFOS D 19 13C5 PFNA Exp1:m/z 468.00 > 423.00:Moving5PtAverage_x Exp1:m/z 463.00 > 419.00:Moving5PtAverage_x Exp1:m/z 503.00 > 80.00:Moving5PtAverage_x3 (21⁻ (000018-(215-56 0014 00012 X10 (0048 ×40 >32 24 16 0 0 2.9 3.0 2.9 2.7 3.3 3.6 2.6 3.2 3.5 2.6 3.2 3.5 2.3 2.3 2.4 D 23 13C2 PFDA 24 Perfluorodecanoic acid D 21 13C8 FOSA Exp1:m/z 515.00 > 470.00:Moving5PtAverage_x Exp1:m/z 506.00 > 78.00:Moving5PtAverage_x3 Exp1:m/z 513.00 > 469.00:Moving5PtAverage_x 70 014 0012 (00054-1245-∑₁₀ ≻36 -40 30 27 20 18 10

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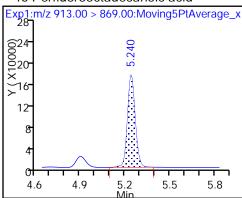
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Report Date: 24-Jul-2017 16:31:34 Chrom Revision: 2.2 26-Jun-2017 08:09:44

46 Perfluorooctadecanoic acid



FORM I LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: Tes	stAmerica Sacramento	Job No	.: 320-	29732-1						
SDG No.:										
Client Sample	e ID:	Lab Sa	Lab Sample ID: LCS 320-175074/2-A							
Matrix: Water	:	le ID:	2017.07.25	B_003.d						
Analysis Meth	od: 537 (Modified)	Date C	ollecte	d:						
Extraction Me	thod: 3535	 Date E	xtracte	d: 07/20/	2017 09	:15				
Sample wt/vol	: 250.00(mL)	Date A	nalyzed	: 07/25/20	17 14:2	4				
Con. Extract	Vol.: 0.50(mL)	Diluti	Dilution Factor: 1							
Injection Vol	ume: 2(uL)	GC Col	umn: Ge	miniC18 3x	100 ID:	3 (mm)				
% Moisture: _		GPC Cl	eanup:(Y/N) N						
Analysis Bato	h No.: 175951	Units:	ng/L							
CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL				
376-06-7	Perfluorotetradecanoic acid (PFTeA)	58.6		2.5	1.	0.40				
CAS NO.	ISOTOPE DILU	UTION	JTION %REC Q LIMITS							
STL00998	13C2 PFDoA			105		25-150				

Report Date: 26-Jul-2017 11:32:45 Chrom Revision: 2.2 26-Jun-2017 08:09:44

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170726-45877.b\2017.07.25B_003.d

Lims ID: LCS 320-175074/2-A

Client ID:

Sample Type: LCS

Inject. Date: 25-Jul-2017 14:24:35 ALS Bottle#: 2 Worklist Smp#: 3

Injection Vol: 2.0 ul Dil. Factor: 1.0000

Sample Info: lcs 320-175074/2-a Misc. Info.: Plate: 1 Rack: 4

Operator ID: SACINSTLCMS01 Instrument ID: A8_N

Method: \ChromNa\Sacramento\ChromData\A8_N\20170726-45877.b\A8_N.m

Limit Group: LC PFC_DOD ICAL

Last Update: 26-Jul-2017 11:32:34 Calib Date: 23-Jul-2017 13:58:26

Integrator: Picker

Quant Method: Isotopic Dilution Quant By: Initial Calibration

Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20170723-45765.b\2017.07.23ICAL_010.d

Column 1: Det: EXP1

Process Host: XAWRK028

First Level Reviewer: chandrasenas Date: 26-Jul-2017 11:06:14

	i iist Level Neviewel, chandrasenas					Date. 20-Jul-2017 11.00.14					
	Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 113C4 PFBA											
	217.00 > 172.00		1.559	-0.006		8976829	57.5		115	30546	
	2 Perfluorobuty 212.90 > 169.00	•	1 550	-0.006	1.000	3654496	23.1		115	1309	
	D 3 13C5-PFPe		1.557	-0.000	1.000	3034470	23.1		113	1307	
	267.90 > 223.00		1.778	-0.015		6369306	57.6		115	45128	
	4 Perfluoropen										
	262.90 > 219.00		1.778	-0.015	1.000	2790368	21.0		105	1543	
	D 47 13C3-PFB9 301.90 > 83.00		1 797	-0 015		157457	NC			4610	
	5 Perfluorobuta			0.010		107 107	110			1010	
	298.90 > 80.00	1.791	1.806	-0.015	1.000	4841054	20.6		117	2988	
	298.90 > 99.00		1.806	-0.015	1.000	1934855		2.50(0.00-0.00)		2292	
	D 7 13C2 PFHx 315.00 > 270.00		2.058	-0 018		5932593	58.6		117	31941	
	6 Perfluorohex			0.010		0702070	00.0		,	01711	
	313.00 > 269.00	2.040	2.058	-0.018	1.000	2441611	21.6		108	4720	
	D 9 13C4-PFHp		0.000	0.000		F / O / 1 O O	47.0		407	07054	
	367.00 > 322.00		2.393	-0.022		5686120	67.8		136	27251	
	10 Perfluorohej 363.00 > 319.00			-0.022	1.000	2486947	21.3		107	5241	
	D 11 18O2 PFH:	κS									
	403.00 > 84.00		2.409			7463717	54.3		115	30987	
	8 Perfluorohex 399.00 > 80.00			-0.022	1.000	3073277	18.0		98.9	2426	
	399.00 > 80.00 D 14 13C4 PFO		2.409	-0.022	1.000	3013211	10.0		70.7	2420	
	417.00 > 372.00		2.756	-0.024		5282286	64.3		129	29704	

Data File:	ata File: \\ChromNa\Sacramento\ChromData\A8_N\20170726-45877.b\2017.07.25B_003.d									
Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
15 Dorflyorood	15 Perfluorooctanoic acid									
413.00 > 369.00			-0.024	1.000	2334880	20.7		104	552	
413.00 > 169.00			-0.024	1.000	1322738	20.7	1.77(0.90-1.10)	104	9118	
16 Perfluorohe					.022700		(6.766)		7.1.0	
449.00 > 80.00	-			1.000	2924882	22.8		120	22669	
17 Perfluorooct				1.000	2721002	22.0		.20	22007	
499.00 > 80.00			-0.023	1.000	2476913	20.5		110	8966	
499.00 > 99.00		3.131	-0.023	1.000	557091	20.0	4.45(0.90-1.10)		3850	
D 19 13C5 PFN/	Α						, ,			
468.00 > 423.00		3.131	-0.023		3682740	56.0		112	18714	
D 18 13C4 PFO										
503.00 > 80.00		3.131	-0.023		5470295	50.6		106	18665	
20 Perfluorono										
463.00 > 419.00			-0.032	1.000	1576377	21.0		105	4058	
D 21 13C8 FOS		0.110	0.002	1.000	1070077	21.0		100	1000	
506.00 > 78.00		3 487	-0.022		7317412	40.0		80.1	11787	
D 23 13C2 PFD		0.107	0.022		7017112	10.0		00.1	11707	
515.00 > 470.00		3 /107	-0.032		3440640	61.6		123	13105	
					3440040	01.0		123	13103	
22 Perfluorooct 498.00 > 78.00			e -0.032	1.000	2953986	22.4		112	12070	
			-0.032	1.000	2933960	22.4		112	12070	
24 Perfluorodeo 513.00 > 469.00			-0.032	1.000	1504043	22.3		112	6620	
				1.000	1304043	22.3		112	0020	
29 Perfluorode				1 000	1445104	20.4		107	10400	
599.00 > 80.00			-0.022	1.000	1465104	20.6		107	10690	
31 Perfluoround			0.000	1 000	1110200	01 F		107	1000	
563.00 > 519.00		3.822	-0.022	1.000	1118308	21.5		107	1998	
D 30 13C2 PFU		2 000	0.000		050/44/	(0.0		104	0.400	
565.00 > 520.00			-0.022		2526116	62.0		124	8490	
37 Perfluorodo										
613.00 > 569.00	4.097	4.116	-0.019	1.000	1006207	23.1		116	2865	
D 36 13C2 PFD										
615.00 > 570.00	4.097	4.116	-0.019		2343032	52.5		105	4250	
41 Perfluorotrio										
663.00 > 619.00	4.360	4.380	-0.020	1.000	942983	23.6		118	359	
42 Perfluoroteti	radecan	oic acid								
712.50 > 668.90			-0.010	1.000	2638055	29.3		146	193	
713.00 > 169.00	4.594	4.614	-0.020	0.998	319691		8.25(0.00-0.00)		4656	
D 43 13C2-PFT	eDA									
715.00 > 670.00	4.604	4.614	-0.010		5981129	73.6		147	32916	
45 Perfluorohe	xadecan	oic acid								
813.00 > 769.00	5.010	5.025	-0.015	1.000	887991	23.3		116	146	
D 44 13C2-PFH	xDA									
815.00 > 770.00	5.010	5.025	-0.015		2255337	54.6		109	2999	
46 Perfluorooct	tadecan	oic acid								
913.00 > 869.00			-0.015	1.000	802336	22.4		112	318	

Chrom Revision: 2.2 26-Jun-2017 08:09:44

Report Date: 26-Jul-2017 11:32:45

OC Flag Legend
Processing Flags
NC - Not Calibrated

Report Date: 26-Jul-2017 11:32:45 Chrom Revision: 2.2 26-Jun-2017 08:09:44 TestAmerica Sacramento Data File: \ChromNa\Sacramento\ChromData\A8_N\20170726-45877.b\2017.07.25B_003.d **Injection Date:** 25-Jul-2017 14:24:35 Instrument ID: A8_N Lims ID: LCS 320-175074/2-A Client ID: Operator ID: SACINSTLCMS01 ALS Bottle#: 2 Worklist Smp#: 3 Injection Vol: 2.0 ul Dil. Factor: 1.0000 Method: Limit Group: LC PFC_DOD ICAL $A8_N$ 2 Perfluorobutyric acid D 113C4 PFBA D 313C5-PFPeA Exp1:m/z 212.90 > 169.00:Moving5PtAverage_x Exp1:m/z 267.90 > 223.00:Moving5PtAverage_x Exp1:m/z 217.00 > 172.00:Moving5PtAverage_x (000015 X12 000042 00001 35 030 0025 15 21 10 0.9 1.2 1.1 1.4 1.7 2.0 1.8 2.1 1.3 1.6 2.5 5 Perfluorobutanesulfonic acid 5 Perfluorobutanesulfonic acid 4 Perfluoropentanoic acid Exp1:m/z 262.90 > 219.00:Moving5PtAverage_x Exp1:m/z 298.90 > 80.00:Moving5PtAverage x3Exp1:m/z 298.90 > 99.00:Moving5PtAverage_x3 (X100000) (X100000) (X100000) (X100000) 6²⁴ (X100000) X (X100000) X 1.9 2.2 2.5 1.4 2.0 2.3 1.5 1.8 1.0 1.3 1.6 1.1 1.2 2.1 2.4 7 13C2 PFHxA 6 Perfluorohexanoic acid 9 13C4-PFHpA ____ Exp1:m/z 367.00 > 322.00:Moving5PtAverage_x 281 Exp1:m/z 315.00 > 270.00:Moving5PtAverage_x Exp1:m/z 313.00 > 269.00:Moving5PtAverage_ 00024 00024 X20 (X100000) X (X1000000) (0024 000020 × 16 1.8 2.1 1.7 2.0 2.3 2.6 1.9 2.2 1.5 2.4 1.4 2.5 2.8 1.1 1.6 8 Perfluorohexanesulfonic acid 10 Perfluoroheptanoic acid D 11 1802 PFHxS Exp1:m/z 403.00 > 84.00:Moving5PtAverage_x3 Exp1:m/z 399.00 > 80.00:Moving5PtAverage_x3 Exp1:m/z 363.00 > 319.00:Moving5PtAverage_> (X100000) (X100000) (X100000) (X100000) 0000 0000 25 ′20 15 10 00 1.8 2.1 2.4 2.7 3.0 3.3 1.5 1.8 2.1 2.4 2.7 3.0 1.5 1.6

Chrom Revision: 2.2 26-Jun-2017 08:09:44

Report Date: 26-Jul-2017 11:32:45

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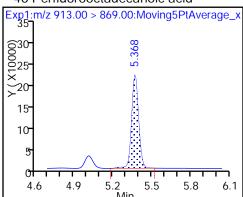
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Report Date: 26-Jul-2017 11:32:45 Chrom Revision: 2.2 26-Jun-2017 08:09:44

46 Perfluorooctadecanoic acid



FORM I LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento	Job No.: <u>320-29732-1</u>
SDG No.:	
Client Sample ID:	Lab Sample ID: LCS 320-175097/2-A
Matrix: Water	Lab File ID: <u>2017.07.23A_003.d</u>
Analysis Method: 537 (Modified)	Date Collected:
Extraction Method: 3535	Date Extracted: 07/20/2017 10:13
Sample wt/vol: 250(mL)	Date Analyzed: 07/23/2017 14:46
Con. Extract Vol.: 0.50(mL)	Dilution Factor: 1
Injection Volume: 2(uL)	GC Column: GeminiC18 3x100 ID: 3(mm)
% Moisture:	GPC Cleanup: (Y/N) N
Analysis Batch No.: 175528	Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
375-22-4	Perfluorobutanoic acid (PFBA)	43.9		2.5	1.0	0.46
2706-90-3	Perfluoropentanoic acid (PFPeA)	40.4		2.5	2.0	0.99
307-24-4	Perfluorohexanoic acid (PFHxA)	41.9		2.5	2.0	0.79
375-85-9	Perfluoroheptanoic acid (PFHpA)	42.1		2.5	2.0	0.80
335-67-1	Perfluorooctanoic acid (PFOA)	39.8		2.5	2.0	0.75
375-95-1	Perfluorononanoic acid (PFNA)	42.2		2.5	2.0	0.65
335-76-2	Perfluorodecanoic acid (PFDA)	42.6		2.5	1.0	0.44
2058-94-8	Perfluoroundecanoic acid (PFUnA)	41.4		2.5	2.0	0.75
307-55-1	Perfluorododecanoic acid (PFDoA)	46.3		2.5	2.0	0.58
72629-94-8	Perfluorotridecanoic Acid (PFTriA)	54.0		2.5	2.0	0.55
375-73-5	Perfluorobutanesulfonic acid (PFBS)	39.2		2.5	2.0	0.92
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	35.8		2.5	2.0	0.87
375-92-8	Perfluoroheptanesulfonic Acid (PFHpS)	44.5		2.5	2.0	0.71
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	38.2		4.0	3.0	1.3
335-77-3	Perfluorodecanesulfonic acid (PFDS)	42.5		4.0	3.0	1.2
754-91-6	Perfluorooctane Sulfonamide (FOSA)	43.1		40	2.0	0.64

FORM I LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento	Job No.: <u>320-29732-1</u>
SDG No.:	
Client Sample ID:	Lab Sample ID: LCS 320-175097/2-A
Matrix: Water	Lab File ID: 2017.07.23A_003.d
Analysis Method: 537 (Modified)	Date Collected:
Extraction Method: 3535	Date Extracted: 07/20/2017 10:13
Sample wt/vol: 250(mL)	Date Analyzed: 07/23/2017 14:46
Con. Extract Vol.: 0.50(mL)	Dilution Factor: 1
Injection Volume: 2(uL)	GC Column: GeminiC18 3x100 ID: 3(mm)
% Moisture:	GPC Cleanup:(Y/N) N
Analysis Batch No.: 175528	Units: ng/L

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL01056	13C8 FOSA	7	Q	25-150
STL00992	13C4 PFBA	101		25-150
STL00993	13C2 PFHxA	100		25-150
STL00990	13C4 PFOA	113		25-150
STL00995	13C5 PFNA	98		25-150
STL00996	13C2 PFDA	120		25-150
STL00997	13C2 PFUnA	104		25-150
STL00998	13C2 PFDoA	86		25-150
STL00994	1802 PFHxS	101		25-150
STL00991	13C4 PFOS	94		25-150
STL01892	13C4-PFHpA	119		25-150
STL01893	13C5 PFPeA	102		25-150

Report Date: 24-Jul-2017 12:07:23 Chrom Revision: 2.2 26-Jun-2017 08:09:44

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \ChromNa\Sacramento\ChromData\A8_N\20170724-45776.b\2017.07.23A_003.d

Lims ID: LCS 320-175097/2-A

Client ID:

Sample Type: LCS

Inject. Date: 23-Jul-2017 14:46:44 ALS Bottle#: 2 Worklist Smp#: 3

Injection Vol: 2.0 ul Dil. Factor: 1.0000

Sample Info: lcs 320-175097/2-a Misc. Info.: Plate: 1 Rack: 4

Operator ID: SACINSTLCMS01 Instrument ID: A8_N

Method: \ChromNa\Sacramento\ChromData\A8_N\20170724-45776.b\A8_N.m

Limit Group: LC PFC_DOD ICAL

Last Update: 24-Jul-2017 12:07:17 Calib Date: 23-Jul-2017 13:58:26

Integrator: Picker

Quant Method: Isotopic Dilution Quant By: Initial Calibration

Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20170723-45765.b\2017.07.23ICAL_010.d

Column 1: Det: EXP1

Process Host: XAWRK004

First Level Reviewer: chandrasenas Date: 24-Jul-2017 11:57:54

First Level Reviewer: chandrasenas					Date:	Date: 24-Jul-2017 11:57:54					
Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags	
2 Perfluorobuty 212.90 > 169.00		1.556	0.007	1.000	3052002	21.9		110	1464		
D 113C4 PFBA		1.550	0.007	1.000	3032002	21.7		110	1404		
217.00 > 172.00		1.556	0.007		7886879	50.5		101	36177		
4 Perfluoropen 262.90 > 219.00		cid 1.775	0.007	1.000	2381527	20.2		101	1456		
D 3 13C5-PFPe		1.775	0.007	1.000	2301327	20.2		101	1430		
267.90 > 223.00		1.775	0.007		5656527	51.2		102	78977		
D 47 13C3-PFBS		4 700	0.007		101007	NO			2275		
301.90 > 83.00		1.793	0.007		131297	NC			3375		
5 Perfluorobuta 298.90 > 80.00	1.809	1.802	0.007	1.000	4062981	19.6		111	2533		
298.90 > 99.00		1.802	0.007	1.000	1590370		2.55(0.00-0.00)		1665		
61 Sodium 1H,		-									
327.00 > 307.00			-0.003	1.000	1168411	21.0		112	38920		
6 Perfluorohex 313.00 > 269.00		id 2.055	0.007	1.000	2020818	20.9		105	5407		
D 7 13C2 PFHx											
315.00 > 270.00		2.055	0.007		5066182	50.1		100	38886		
10 Perfluorohe; 363.00 > 319.00		acid 2.403	0.006	1.000	2161863	21.1		105	6586		
D 913C4-PFHp					_,,,,,,,,						
367.00 > 322.00		2.403	0.006		4998603	59.6		119	36601		
8 Perfluorohex				1 000	2/00/02	17.0		00.0	2220		
399.00 > 80.00		2.419	0.006	1.000	2690402	17.9		98.2	2328		
D 11 18O2 PFH) 403.00 > 84.00		2.419	0.006		6579646	47.9		101	37270		
13 Sodium 1H,		-	orooctan	е							
427.00 > 407.00	2.751	2.742	0.009	1.000	Page 979 of 1	104 22.3		118	18226		

Report Date: 24-Jul-2017 12:07:23 Chrom Revision: 2.2 26-Jun-2017 08:09:44

Data File:				to\Chrom			26-Jun-2017 08:09: 6.b\2017.07.23A_00			
Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 12 M2-6:2FTS 429.00 > 409.00		2.742	0.009		2719354	57.2		120	31525	
15 Perfluorooc 413.00 > 369.00 413.00 > 169.00	2.780 2.773	2.771 2.771 2.771	0.009 0.002	1.000 0.997	1965342 1225010	19.9	1.60(0.90-1.10)	99.5	570 7589	
D 14 13C4 PFO 417.00 > 372.00		2.771	0.002		4626917	56.3		113	33530	
16 Perfluorohe 449.00 > 80.00	•	fonic Ac 2.778	id 0.002	1.000	2543218	22.3		117	25625	
17 Perfluorooc 499.00 > 80.00 499.00 > 99.00	3.156 3.156	3.151 3.151	d 0.005 0.005	1.000 1.000	2055468 434769	19.1	4.73(0.90-1.10)	103	7662 2846	
20 Perfluorono 463.00 > 419.00		cid 3.151	0.005	1.000	1377313	21.1		105	4760	
D 18 13C4 PFO 503.00 > 80.00		3.151	0.005		4866132	45.0		94.1	21756	
D 19 13C5 PFN 468.00 > 423.00		3.151	0.005		3207606	48.8		97.6	15958	
25 Sodium 1H 527.00 > 507.00		•		ne 1.000	1132944	22.9		120	19226	
D 26 M2-8:2FT5 529.00 > 509.00		3.497	0.010		2601645	71.3		149	13122	
D 21 13C8 FOS 506.00 > 78.00		3.507	0.0		626734	3.43		6.9	5644	
22 Perfluorooc 498.00 > 78.00		fonamid 3.507		1.000	243545	21.5		108	3231	
D 23 13C2 PFD 515.00 > 470.00	Α		0.009		3347726	60.0		120	9217	
24 Perfluorode 513.00 > 469.00	canoic a		0.009	1.000	1398708	21.3		107	5888	
D 27 d3-NMeFC 573.00 > 419.00	SAA	3.658	0.015	1.000	958470	44.1		88.2	7687	
28 N-methyl pe	erfluoroo	ctane su	ılfonami	1 000						
570.00 > 419.00 29 Perfluorode	cane Sul			1.000	443563	25.4		127	7246	
599.00 > 80.00 D 32 d5-NEtFO		3.815	0.011	1.000	1346581	21.2		110	10257	
589.00 > 419.00 31 Perfluoroun		3.824 c acid	0.011		958018	43.7		87.4	3202	
563.00 > 519.00 33 N-ethyl perf		3.833 ane sulfo	0.011 onamid	1.000	904793	20.7		104	2314	
584.00 > 419.00 D 30 13C2 PFU	3.844	3.833	0.011	1.002	395682	24.3		122	5075	
565.00 > 520.00	3.844	3.833	0.011		2119222	52.0		104	9826	
37 Perfluorodo 613.00 > 569.00	4.139	4.123	0.016	1.000	823868	23.1		116	736	
D 36 13C2 PFD 615.00 > 570.00		4.123	0.016		Page 972 of 1	104 ^{42.9}		85.8	8956	

Report Date: 24-Jul-2017 12:07:23 Chrom Revision: 2.2 26-Jun-2017 08:09:44 Data File:

Pata File. Helifethira lead a membrata File. File File File File File File File File									
RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
ecanoic	acid								
4.398	4.388	0.010	1.000	880910	27.0		135	358	
eDA									
4.641	4.619	0.023		6449013	79.4		159	33341	
adecan	oic acid								
4.641	4.630	0.011	1.000	2709266	36.8		184	254	
4.630	4.630	0.0	0.998	367142		7.38(0.00-0.00)		6041	
kadecan	oic acid								
5.044	5.030	0.014	1.000	719045	23.0		115	179	
κDA									
5.044	5.030	0.014		1960192	47.5		94.9	4489	
5.394	5.381	0.013	1.000	665292	22.7		113	325	
	ecanoic 4.398 2DA 4.641 radecano 4.641 4.630 kadecano 5.044 kDA 5.044 adecano	ecanoic acid 4.398	ecanoic acid 4.398	ecanoic acid 4.398	ecanoic acid 4.398	EXP RT RT REL Response ng/ml ecanoic acid 4.398	EXP RT RT RT REL Response	EXP RT RT RT REL Response	RT RT RT RT REL Response ng/ml Ratio(Limits) %Rec S/N ecanoic acid 4.398 4.388 0.010 1.000 880910 27.0 135 358 EDA 4.641 4.619 0.023 6449013 79.4 159 33341 radecanoic acid 4.641 4.630 0.011 1.000 2709266 36.8 4.630 4.630 0.0 0.998 367142 7.38(0.00-0.00) 6041 radecanoic acid 5.044 5.030 0.014 1.000 719045 23.0 115 179 KDA 5.044 5.030 0.014 1.960192 47.5 94.9 4489 adecanoic acid

QC Flag Legend Processing Flags

NC - Not Calibrated

Report Date: 24-Jul-2017 12:07:23 Chrom Revision: 2.2 26-Jun-2017 08:09:44 TestAmerica Sacramento Data File: \ChromNa\Sacramento\ChromData\A8_N\20170724-45776.b\2017.07.23A_003.d **Injection Date:** 23-Jul-2017 14:46:44 Instrument ID: A8_N Lims ID: LCS 320-175097/2-A Client ID: Operator ID: SACINSTLCMS01 ALS Bottle#: 2 Worklist Smp#: 3 Injection Vol: 2.0 ul Dil. Factor: 1.0000 Method: Limit Group: LC PFC_DOD ICAL $A8_N$ 2 Perfluorobutyric acid D 113C4 PFBA 4 Perfluoropentanoic acid Exp1:m/z 212.90 > 169.00:Moving5PtAverage_x Exp1:m/z 217.00 > 172.00:Moving5PtAverage_x Exp1:m/z 262.90 > 219.00:Moving5PtAverage_x (X100000) (X100000) (X100000) (015-0000012 X) 9 (000001X 30 30 18 12 1.2 1.5 1.2 1.8 1.8 2.1 1.1 1.4 2.0 1.5 2.1 5 Perfluorobutanesulfonic acid 5 Perfluorobutanesulfonic acid 3 13C5-PFPeA Exp1:m/z 267.90 > 223.00:Moving5PtAverage_x Exp1:m/z 298.90 > 80.00:Moving5PtAverage_x3 Exp1:m/z 298.90 > 99.00:Moving5PtAverage_x3 21- 00018-15-77 ©28 0024 0066-X55-×20 12 22 11 2.4 1.5 1.8 2.1 1.0 1.3 1.9 2.2 2.5 1.5 1.8 2.1 1.2 1.6 1.2 2.4 61 Sodium 1H,1H,2H,2H-perfluorohexan& Perfluorohexanoic acid 7 13C2 PFHxA Exp1:m/z 327.00 > 307.00:Moving5PtAverage_x Exp1:m/z 313.00 > 269.00:Moving5PtAverage_> Exp1:m/z 315.00 > 270.00:Moving5PtAverage_x (21°00018° ×15° 656 648 684**-**672-×40 \times 60 ≻₃₂ ≻₄₈-36 24 16 12 1.8 2.1 2.2 2.8 1.5 1.8 2.1 1.5 2.4 1.6 2.4 2.7 1.0 8 Perfluorohexanesulfonic acid 10 Perfluoroheptanoic acid 9 13C4-PFHpA Exp1:m/z 363.00 > 319.00:Moving5PtAverage_) Exp1:m/z 367.00 > 322.00:Moving5PtAverage_x Exp1:m/z 399.00 > 80.00:Moving5PtAverage_x3 (X100000) ©21- 684 672 ×60 ≻₄₈ 36 24 0 0

1.9

1.6

2.2

2.5

2.8

3.1

1.8

1.5

2.1

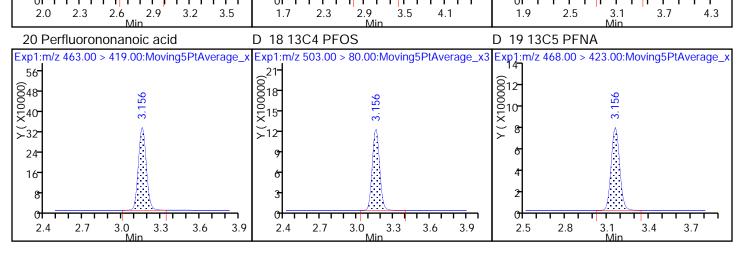
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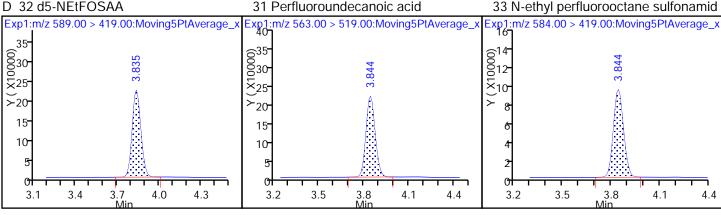
2.7

3.0

3.3

Report Date: 24-Jul-2017 12:07:23 Chrom Revision: 2.2 26-Jun-2017 08:09:44 Data File: \ChromNa\Sacramento\ChromData\A8_N\20170724-45776.b\2017.07.23A_003.d D 11 1802 PFHxS 13 Sodium 1H,1H,2H,2H-perfluoroocta De 12 M2-6:2FTS Exp1:m/z 403.00 > 84.00:Moving5PtAverage_x3 (X100000) (X100000) 8 49 028 024 <u>≻</u>20 ≻₁₆ ∑28- 21 12 2.9 2.7 3.3 2.7 1.7 2.0 2.3 2.6 2.1 2.4 3.0 2.1 2.4 3.0 3.3 15 Perfluorooctanoic acid 15 Perfluorooctanoic acid D 14 13C4 PFOA Exp1:m/z 413.00 > 369.00:Moving5PtAverage_x Exp1:m/z 413.00 > 169.00:Moving5PtAverage_x Exp1:m/z 417.00 > 372.00:Moving5PtAverage_ 21- (000018-X) (49⁻ 0042⁻ ©77 066 ×35- Σ_{55} **≻28** 21 33 14 22 11-2.8 2.7 2.9 2.5 2.4 3.0 2.3 3.1 3.3 3.5 17 Perfluorooctane sulfonic acid 16 Perfluoroheptanesulfonic Acid 17 Perfluorooctane sulfonic acid Exp1:m/z 449.00 > 80.00:Moving5PtAverage_x3 Exp1:m/z 499.00 > 80.00:Moving5PtAverage_x3 Exp1:m/z 499.00 > 99.00:Moving5PtAverage_x3 63 (X100000) (000012 X 00054 ×45 <u>~</u>36 27 18 0 0





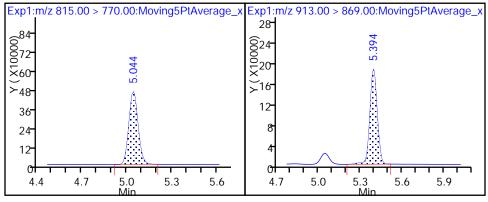
Chrom Revision: 2.2 26-Jun-2017 08:09:44

Report Date: 24-Jul-2017 12:07:23

Report Date: 24-Jul-2017 12:07:23 Chrom Revision: 2.2 26-Jun-2017 08:09:44

D 44 13C2-PFHxDA

46 Perfluorooctadecanoic acid



FORM I LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: Tes	tAmerica Sacramento	Job No	.: 320-	29732-1						
SDG No.:										
Client Sample	ID:	Lab Sa	Lab Sample ID: LCS 320-175742/2-A							
Matrix: Water		Lab Fi	le ID:	2017.07.27	C_003.d					
Analysis Meth	od: 537 (Modified)	Date C	ollecte	d:						
Extraction Me	thod: <u>3535</u>	Date E	xtracte	d: <u>07/25/</u>	2017 09	:12				
Sample wt/vol	: 250.00(mL)	Date A	nalyzed	: 07/27/20	17 21:02	2				
Con. Extract	Vol.: 0.50(mL)	Diluti	Dilution Factor: 1							
Injection Vol	ume: 2(uL)	GC Col	umn: Ge	miniC18 3x	100 ID: 3	3 (mm)				
% Moisture: _		GPC Cl	eanup:(Y/N) <u>N</u>						
Analysis Batc	h No.: 176487	Units:	ng/L							
CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL				
754-91-6	Perfluorooctane Sulfonamide (FOSA)	44.4		40	2.0	0.64				
CAS NO.	ISOTOPE DIL	UTION		%REC	Q	LIMITS				

62

25-150

STL01056

13C8 FOSA

Report Date: 28-Jul-2017 14:14:15 Chrom Revision: 2.2 26-Jun-2017 08:09:44

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170728-45994.b\2017.07.27C_003.d

Lims ID: LCS 320-175742/2-A

Client ID:

Sample Type: LCS

Inject. Date: 27-Jul-2017 21:02:40 ALS Bottle#: 26 Worklist Smp#: 3

Injection Vol: 2.0 ul Dil. Factor: 1.0000

Sample Info: lcs 320-175742/2-a Misc. Info.: Plate: 1 Rack: 3

Operator ID: SACINSTLCMS01 Instrument ID: A8_N

Method: \ChromNa\Sacramento\ChromData\A8_N\20170728-45994.b\A8_N.m

Limit Group: LC PFC_DOD ICAL

Last Update: 28-Jul-2017 14:14:10 Calib Date: 23-Jul-2017 13:58:26

Integrator: Picker

Quant Method: Isotopic Dilution Quant By: Initial Calibration

Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20170723-45765.b\2017.07.23ICAL_010.d

Column 1: Det: EXP1

Process Host: XAWRK013

First Level Reviewer: barnettj Date: 28-Jul-2017 13:44:18

First Level Revi	evel Reviewer: barnettj Date: 28-Jul-2017 13:44:18									
Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
2 Perfluorobu	ıtvric acid									
212.90 > 169.0	•	1.565	0.007	1.000	2807826	22.3		112	863	
D 113C4 PFB	SA.									
217.00 > 172.0	0 1.572	1.565	0.007		7129799	45.7		91.4	16082	
4 Perfluorope	entanoic a	cid								
262.90 > 219.0	0 1.791	1.784	0.007	1.000	2105669	19.0		95.0	872	
D 3 13C5-PFF										
267.90 > 223.0		1.784	0.007		5320015	48.1		96.3	29712	
D 47 13C3-PF		1 000	0.017		110017	NO			4407	
301.90 > 83.00		1.802	0.017		119917	NC			4427	
5 Perfluorobu 298.90 > 80.00		nic acid 1.812	0.007	1.000	3482931	17.4		98.6	2367	
298.90 > 99.00		1.812	0.007	1.000	1361616	17.4	2.56(0.00-0.00)	70.0	1763	
61 Sodium 1F							,			
327.00 > 307.0		•	0.008	1.000	986293	18.3		97.9	24654	
6 Perfluorohe	exanoic ac	cid								
313.00 > 269.0	0 2.074	2.054	0.020	1.000	1934353	20.2		101	3965	
D 7 13C2 PFH	IxA									
315.00 > 270.0	0 2.062	2.054	0.008		5033458	49.8		99.5	18979	
10 Perfluoroh										
363.00 > 319.0	0 2.399	2.385	0.014	1.000	2104000	20.5		103	2522	
D 9 13C4-PFF	•									
367.00 > 322.0		2.385	0.014		4992743	59.6		119	15198	
8 Perfluorohe				1 000	24/07/5	17.0		02.5	2277	
399.00 > 80.00		2.401	0.014	1.000	2469765	17.0		93.5	2276	
D 11 18O2 PFI 403.00 > 84.00		2.401	0.014		6347025	46.2		97.6	18352	
				0	0347023	40.∠		97.0	10332	
13 Sodium 1F 427.00 > 407.0		n-perilu 2.711	0.023	e 1.000	Palge 9800 of 1	104 21 1		112	12166	
127.00 / 407.0	0 2.704	۷./۱۱	0.020	1.000	rage you on i	104 - 1. 1		112	12100	

Data File.	NCIIIC	Jiliva	ici ai nen	OCHION	Dala (Ao_IN)20 I	10120-4399	4.D\2017.07.27C_0	J3.u		
Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 12 M2-6:2FTS										
429.00 > 409.00		2.711	0.023		2637690	55.5		117	17351	
15 Perfluorooct 413.00 > 369.00		2.740	0.023	1.000	1961592	19.7		98.7	433	
413.00 > 369.00		2.740	0.023	1.000	1080871	17.7	1.81(0.90-1.10)	70.7	5213	
D 14 13C4 PFO							,			
417.00 > 372.00	2.763	2.740	0.023		4656196	56.7		113	17233	
16 Perfluorohe										
449.00 > 80.00			0.023	1.000	2284310	21.6		113	14819	
20 Perfluoronoi 463.00 > 419.00			0.028	1.000	1342791	19.2		96.1	2611	
17 Perfluorooct				1.000	1342771	17.2		70.1	2011	
499.00 > 80.00		3.111	0.028	1.000	1857828	18.6		100	11682	
499.00 > 99.00	3.139	3.111	0.028	1.000	388281		4.78(0.90-1.10)		2579	
D 19 13C5 PFN										
468.00 > 423.00		3.111	0.028		3431991	52.2		104	12277	
D 18 13C4 PFO		3.111	0.020		4514128	41 7		07.2	12075	
503.00 > 80.00 22 Perfluorooct			0.028		4514128	41.7		87.3	13075	
498.00 > 78.00		3.454		1.000	2268822	22.2		111	9828	
25 Sodium 1H,									7020	
527.00 > 507.00		•		1.000	868022	21.1		110	11503	
D 21 13C8 FOS	А									
506.00 > 78.00	3.475	3.454	0.021		5670182	31.0		62.0	9300	
D 26 M2-8:2FTS										
529.00 > 509.00		3.454	0.030		2160319	59.2		124	14698	
24 Perfluorodeo 513.00 > 469.00		cid 3.474	0.019	1.000	1311597	20.0		99.8	5492	
D 23 13C2 PFD/		3.474	0.019	1.000	1311397	20.0		99.0	3492	
515.00 > 470.00		3.474	0.019		3354597	60.1		120	7120	
28 N-methyl pe										
570.00 > 419.00		3.631	0.016	1.000	348896	22.7		113	5169	
D 27 d3-NMeFO										
573.00 > 419.00		3.631	0.016		844688	38.9		77.7	5133	
29 Perfluorode				1 000	112000/	10.0		00.0	7/01	
599.00 > 80.00		3.777	0.026	1.000	1130986	19.2		99.8	7601	
D 32 d5-NEtFOS 589.00 > 419.00		3.787	0.025		972487	44.3		88.7	2240	
31 Perfluoround			0.023		772407	44.0		00.7	2240	
563.00 > 519.00		3.797	0.024	1.000	918038	21.4		107	1441	
33 N-ethyl perfl	uoroocta	ane sulfo	namid							
584.00 > 419.00		3.797	0.024	1.002	358341	21.7		109	3550	
D 30 13C2 PFUr	nΑ									
565.00 > 520.00	3.821	3.797	0.024		2078788	51.0		102	8951	
35 MeFOSA	0.074	2.057	0.015	1 000	//40	20.0		4/4	04 7	
512.00 > 169.00		3.956	0.015	1.000	6613	32.3		161	81.7	
D 34 d-N-MeFOS 515.00 > 169.00		3.956	0.015		_ 1115/	N 2367		0.5	4.0	
310.00 / 107.00	0.771	5.750	0.010		Page 981 of 1	1047.2307		5.5	1.0	

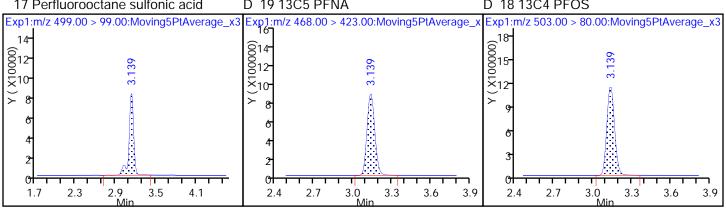
Report Date: 28-Jul-2017 14:14:15 Chrom Revision: 2.2 26-Jun-2017 08:09:44 Data File:

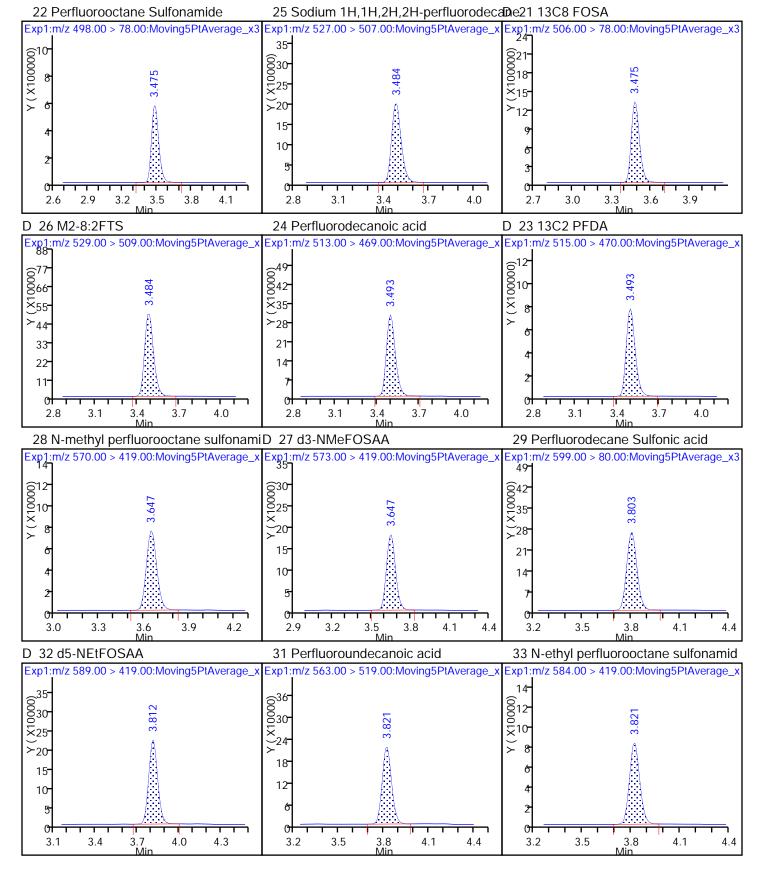
Data File.	WOTH	Jiiii Va ISC	cramen	0101110111	Data / 10_11/201	70720 4377	4.012017.07.270_00	75.u		
Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 36 13C2 PFD	οA									
615.00 > 570.00	4.112	4.088	0.024		1986311	44.5		89.0	3476	
37 Perfluorodo	decanoio	c acid								
613.00 > 569.00	4.112	4.096	0.016	1.000	755448	20.5		102	1067	
39 N-ethylperflu										
526.00 > 169.00	4.171	4.147	0.024	1.000	2394	18.3		91.3	25.7	
D 38 d-N-EtFOS			0.017		7074	0.4.4.0				
531.00 > 169.00			0.016		7071	0.1448		0.3	32.4	
41 Perfluorotrid			0.000	1 000	752070	22.2		444	211	
663.00 > 619.00			0.022	1.000	753868	22.3		111	211	
42 Perfluorotetr 712.50 > 668.90			0.026	1.000	2114783	27.7		138	162	
713.00 > 169.00		4.593	0.026	0.998	290171	21.1	7.29(0.00-0.00)	130	3196	
D 43 13C2-PFTe		1.070	0.010	0.770	270171		7.27(0.00 0.00)		0170	
715.00 > 670.00		4.593	0.026		5333296	65.7		131	11676	
D 44 13C2-PFH	xDA									
815.00 > 770.00		5.005	0.019		2006413	48.6		97.1	3249	
45 Perfluorohe	xadecan	oic acid								
813.00 > 769.00	5.033	5.015	0.018	1.000	712900	22.0		110	138	
46 Perfluorooct	adecano	oic acid								
913.00 > 869.00	5.381	5.365	0.016	1.000	696541	22.9		115	230	

QC Flag Legend Processing Flags NC - Not Calibrated

Report Date: 28-Jul-2017 14:14:15 Chrom Revision: 2.2 26-Jun-2017 08:09:44 TestAmerica Sacramento Data File: **Injection Date:** 27-Jul-2017 21:02:40 Instrument ID: A8_N Lims ID: LCS 320-175742/2-A Client ID: Operator ID: SACINSTLCMS01 ALS Bottle#: 26 Worklist Smp#: 3 Injection Vol: 2.0 ul Dil. Factor: 1.0000 Method: Limit Group: LC PFC_DOD ICAL $A8_N$ 2 Perfluorobutyric acid D 113C4 PFBA 4 Perfluoropentanoic acid Exp1:m/z 217.00 > 172.00:Moving5PtAverage_x Exp1:m/z 262.90 > 219.00:Moving5PtAverage_x Exp1:m/z 212.90 > 169.00:Moving5PtAverage_x (12 (X) X (X Y (X100000) $\stackrel{\smile}{\times}_{20}$ 12 1.8 1.1 1.4 1.7 2.0 0.8 1.1 1.4 2.0 1.2 1.5 2.1 5 Perfluorobutanesulfonic acid 5 Perfluorobutanesulfonic acid 3 13C5-PFPeA Exp1:m/z 298.90 > 80.00:Moving5PtAverage_x3 Exp1:m/z 298.90 > 99.00:Moving5PtAverage_x3 641 Exp1:m/z 267.90 > 223.00:Moving5PtAverage_x (000020 X16 (0000015⁻ (X1000000) (X) > 9 656 648 24 16 1.5 1.8 1.9 2.2 2.1 2.4 1.9 2.2 1.3 1.6 1.3 1.6 61 Sodium 1H,1H,2H,2H-perfluorohexan& Perfluorohexanoic acid 7 13C2 PFHxA Exp1:m/z 327.00 > 307.00:Moving5PtAverage_x Exp1:m/z 313.00 > 269.00:Moving5PtAverage_; Exp1:m/z 315.00 > 270.00:Moving5PtAverage_x (00020 ×16 642 0036 (0072 ×60 \approx 30 ≻48- 36 18 24 12 2.0 2.2 2.8 1.9 2.2 1.4 1.7 2.3 2.6 1.6 1.6 2.5 2.8 1.0 1.3 8 Perfluorohexanesulfonic acid 10 Perfluoroheptanoic acid 9 13C4-PFHpA Exp1:m/z 367.00 > 322.00:Moving5PtAverage_x Exp1:m/z 363.00 > 319.00:Moving5PtAverage_> Exp1:m/z 399.00 > 80.00:Moving5PtAverage_x3 91-©21- 684 672 () 00 78 ×65 **≻**52 ≻48 39 36 24 26 13 12 $^{\circ}$ 0 02.0 2.6 3.2 1.7 2.9 2.0 2.3 2.6 2.9 3.2 1.4 1.7

Report Date: 28-Jul-2017 14:14:15 Chrom Revision: 2.2 26-Jun-2017 08:09:44 Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170728-45994.b\2017.07.27C_003.d D 11 1802 PFHxS 13 Sodium 1H,1H,2H,2H-perfluoroocta De 12 M2-6:2FTS Exp1:m/z 427.00 > 407.00:Moving5PtAverage_x Exp1:m/z 429.00 > 409.00:Moving5PtAverage_x Exp1:m/z 403.00 > 84.00:Moving5PtAverage_x3 (X100000) X30 0036 12 18 12 1.9 2.5 2.8 2.7 2.2 2.8 3.1 2.2 2.5 3.1 2.1 2.4 3.0 3.3 1.6 15 Perfluorooctanoic acid 15 Perfluorooctanoic acid D 14 13C4 PFOA Exp1:m/z 413.00 > 369.00:Moving5PtAverage_x Exp1:m/z 413.00 > 169.00:Moving5PtAverage_x Exp1:m/z 417.00 > 372.00:Moving5PtAverage_ 84 642 636 ©72-×60-×30 >48 ≻₂₄· 36 18 24 12 12 2.7 2.8 2.7 2.5 2.4 3.0 2.4 3.3 3.1 3.3 3.0 16 Perfluoroheptanesulfonic Acid 20 Perfluorononanoic acid 17 Perfluorooctane sulfonic acid Exp1:m/z 499.00 > 80.00:Moving5PtAverage_x3 Exp1:m/z 449.00 > 80.00:Moving5PtAverage_x3 Exp1:m/z 463.00 > 419.00:Moving5PtAverage_) (X100000) (49⁻ 0042⁻ 0648- ×35 _32 ≻₂₈ 24 21 16- 14 0 0 2.7 2.4 3.0 3.3 2.7 3.3 3.9 2.4 3.3 4.2 2.1 3.0 3.6 1.5 2.4 D 19 13C5 PFNA 17 Perfluorooctane sulfonic acid D 18 13C4 PFOS Exp1:m/z 468.00 > 423.00:Moving5PtAverage_x Exp1:m/z 503.00 > 80.00:Moving5PtAverage_x3 14





Chrom Revision: 2.2 26-Jun-2017 08:09:44

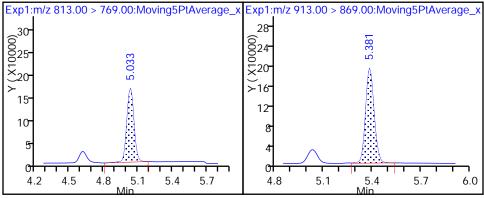
Report Date: 28-Jul-2017 14:14:15

Report Date: 28-Jul-2017 14:14:15 Chrom Revision: 2.2 26-Jun-2017 08:09:44

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170728-45994.b\2017.07.27C_003.d

45 Perfluorohexadecanoic acid

46 Perfluorooctadecanoic acid



FORM I LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento	Job No.: 320-29732-1
SDG No.:	
Client Sample ID:	Lab Sample ID: LCSD 320-174599/3-A
Matrix: Water	Lab File ID: 2017.07.21C_018.d
Analysis Method: 537 (Modified)	Date Collected:
Extraction Method: 3535	Date Extracted: 07/18/2017 07:22
Sample wt/vol: 250(mL)	Date Analyzed: 07/21/2017 20:59
Con. Extract Vol.: 0.50(mL)	Dilution Factor: 1
Injection Volume: 2(uL)	GC Column: GeminiC18 3x100 ID: 3(mm)
% Moisture:	GPC Cleanup: (Y/N) N
Analysis Batch No.: 175462	Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
375-22-4	Perfluorobutanoic acid (PFBA)	47.2		2.5	1.0	0.46
2706-90-3	Perfluoropentanoic acid (PFPeA)	43.9		2.5	2.0	0.99
307-24-4	Perfluorohexanoic acid (PFHxA)	42.9		2.5	2.0	0.79
375-85-9	Perfluoroheptanoic acid (PFHpA)	43.3		2.5	2.0	0.80
335-67-1	Perfluorooctanoic acid (PFOA)	42.9		2.5	2.0	0.75
375-95-1	Perfluorononanoic acid (PFNA)	42.8		2.5	2.0	0.65
335-76-2	Perfluorodecanoic acid (PFDA)	42.5		2.5	1.0	0.44
2058-94-8	Perfluoroundecanoic acid (PFUnA)	40.6		2.5	2.0	0.75
307-55-1	Perfluorododecanoic acid (PFDoA)	43.8		2.5	2.0	0.58
72629-94-8	Perfluorotridecanoic Acid (PFTriA)	46.6		2.5	2.0	0.55
376-06-7	Perfluorotetradecanoic acid (PFTeA)	49.4		2.5	1.0	0.40
375-73-5	Perfluorobutanesulfonic acid (PFBS)	37.4		2.5	2.0	0.92
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	38.5		2.5	2.0	0.87
375-92-8	Perfluoroheptanesulfonic Acid (PFHpS)	41.6		2.5	2.0	0.71
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	39.2		4.0	3.0	1.3
335-77-3	Perfluorodecanesulfonic acid (PFDS)	38.4		4.0	3.0	1.2
754-91-6	Perfluorooctane Sulfonamide (FOSA)	43.3		40	2.0	0.64

FORM I LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento	Job No.: 320-29732-1
SDG No.:	
Client Sample ID:	Lab Sample ID: LCSD 320-174599/3-A
Matrix: Water	Lab File ID: 2017.07.21C_018.d
Analysis Method: 537 (Modified)	Date Collected:
Extraction Method: 3535	Date Extracted: 07/18/2017 07:22
Sample wt/vol: 250(mL)	Date Analyzed: 07/21/2017 20:59
Con. Extract Vol.: 0.50(mL)	Dilution Factor: 1
Injection Volume: 2(uL)	GC Column: GeminiC18 3x100 ID: 3(mm)
% Moisture:	GPC Cleanup:(Y/N) N
Analysis Batch No.: 175462	Units: ng/L

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL01056	13C8 FOSA	20	Q	25-150
STL00992	13C4 PFBA	97		25-150
STL00993	13C2 PFHxA	105		25-150
STL00990	13C4 PFOA	125		25-150
STL00995	13C5 PFNA	111		25-150
STL00996	13C2 PFDA	128		25-150
STL00997	13C2 PFUnA	117		25-150
STL00998	13C2 PFDoA	101		25-150
STL00994	1802 PFHxS	97		25-150
STL00991	13C4 PFOS	96		25-150
STL01892	13C4-PFHpA	132		25-150
STL01893	13C5 PFPeA	101		25-150

Report Date: 24-Jul-2017 16:31:37 Chrom Revision: 2.2 26-Jun-2017 08:09:44

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170722-45761.b\2017.07.21C_018.d

Lims ID: LCSD 320-174599/3-A

Client ID:

Sample Type: LCSD

Inject. Date: 21-Jul-2017 20:59:13 ALS Bottle#: 15 Worklist Smp#: 4

Injection Vol: 2.0 ul Dil. Factor: 1.0000

Sample Info: lcsd 320-174599/3-a Misc. Info.: Plate: 1 Rack: 4

Operator ID: SACINSTLCMS01 Instrument ID: A8_N

Method: \ChromNa\Sacramento\ChromData\A8_N\20170722-45761.b\A8_N.m

Limit Group: LC PFC_DOD ICAL

Last Update: 24-Jul-2017 16:31:26 Calib Date: 20-Jul-2017 18:04:17

Integrator: Picker

Quant Method: Isotopic Dilution Quant By: Initial Calibration

Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20170720-45703.b\2017.07.20ICAL_010.d

Column 1: Det: EXP1

Process Host: XAWRK004

First Level Reviewer: chandrasenas Date: 24-Jul-2017 16:05:34

I II St Level Kevie	i iist Level Neviewel, chandraselias					24-Jul-2017 10.05.34				
Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 113C4 PFBA	١									
217.00 > 172.00		1.537	-0.007		8725583	48.5		97.0	29158	
2 Perfluorobut 212.90 > 169.00	•	1.537	0.002	1.000	3750965	23.6		118	1696	
D 3 13C5-PFPe		1.557	0.002	1.000	3730703	23.0		110	1070	
267.90 > 223.00		1.727	0.002		6061029	50.7		101	49064	
4 Perfluoroper			0.007	1 000	2/55705	22.0		110	15/0	
262.90 > 219.00 D 47 13C3-PFB		1.737	-0.007	1.000	2655795	22.0		110	1560	
301.90 > 83.00		1.755	0.002		145253	NC			4393	
5 Perfluorobut										
298.90 > 80.00 298.90 > 99.00	1.757 1.757	1.755 1.755	0.002 0.002	1.000 1.000	4154408 1703534	18.7	2.44(0.00-0.00)	106	2918 2239	
D 7 13C2 PFHx		1.755	0.002	1.000	1703334		2.44(0.00-0.00)		2237	
315.00 > 270.00		1.994	-0.008		5823660	52.7		105	35056	
6 Perfluorohex		id 1.994	0.000	1 000	2240447	21.4		107	4759	
313.00 > 269.00 D 9 13C4-PFH _k		1.994	-0.008	1.000	2340647	21.4		107	4/59	
367.00 > 322.00		2.316	-0.001		6421134	66.0		132	30209	
10 Perfluorohe	•									
363.00 > 319.00				1.000	2803676	21.6		108	5675	
8 Perfluorohex 399.00 > 80.00		2.324		1.000	3075356	19.2		106	2717	
D 11 18O2 PFH										
403.00 > 84.00		2.332	-0.009		7391281	46.1		97.5	32312	
D 14 13C4 PFO 417.00 > 372.00		2.656	0.006		5470495	62.3		125	34527	
+11.00 > 312.00	2.002	2.000	0.000		3470473	02.3		125	34327	

Data File:	\\Cnr	omiva\5	acramen	io\Cnrom	Data\A8_N\201	/0/22-45/6	1.b\2017.07.21C_0	18.a		
Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
1E Dorfluorooot	onolo od	· ·id						•		
15 Perfluorooct 413.00 > 369.00			-0.001	1.000	2457510	21.5		107	593	
413.00 > 369.00		2.663		1.000	2457518 1433004	21.3	1.71(0.90-1.10)	107	6908	
				1.000	1433004		1.71(0.90-1.10)		0900	
16 Perfluorohe _l										
449.00 > 80.00	2.669	2.670	-0.001	1.000	2758660	20.8		109	25169	
17 Perfluorooct	ane sulf	onic aci	d							
499.00 > 80.00	3.026	3.029	-0.003	1.000	2291797	19.6		106	13567	
499.00 > 99.00	3.026	3.029	-0.003	1.000	478284		4.79(0.90-1.10)		3414	
20 Perfluoronoi	nanoic a	cid								
463.00 > 419.00			-0.003	1.000	1641844	21.4		107	3809	
		0.027	0.000	1.000	1011011	21.1		107	0007	
D 18 13C4 PFO		2 222	0.000		E 4007E0	45.0		05.0	0.4007	
503.00 > 80.00		3.029	-0.003		5402752	45.8		95.8	24097	
D 19 13C5 PFN/	4									
468.00 > 423.00	3.026	3.029	-0.003		3837229	55.4		111	20907	
24 Perfluorodeo	canoic a	cid								
513.00 > 469.00		3.380	0.002	1.000	1535602	21.2		106	5349	
		0.000	0.002	1.000	1000002	22		100	0017	
D 23 13C2 PFD/		2 200	0.000		20/4205	(2.0		100	10010	
515.00 > 470.00		3.380	0.002		3861395	63.8		128	18312	
D 21 13C8 FOS	Д									
506.00 > 78.00	3.390	3.388	0.002		1990628	10.1		20.3	14595	
22 Perfluorooct	ane Sul	fonamid	e							
498.00 > 78.00		3.388	0.002	1.000	795156	21.6		108	11311	
				1.000	770100	21.0		100	11011	
29 Perfluorode				1 000	4202707	10.0		00.7	0000	
599.00 > 80.00	3.700	3.690	0.010	1.000	1383707	19.2		99.7	8993	
31 Perfluoround	decanoi	c acid								
563.00 > 519.00	3.710	3.709	0.001	1.000	1009382	20.3		101	1865	
D 30 13C2 PFUr	nΑ									
565.00 > 520.00		3.709	0.001		2453443	58.4		117	8507	
		3.707	0.001		2400440	30.4		117	0007	
D 36 13C2 PFD		4.004	0.0		0400450	F0 F		404	4070	
615.00 > 570.00	4.004	4.004	0.0		2198452	50.5		101	4970	
37 Perfluorodo	decanoi	c acid								
613.00 > 569.00	4.004	4.004	0.0	1.000	908530	21.9		109	2140	
41 Perfluorotrid	lecanoic	acid								
663.00 > 619.00		4.266	0.0	1.000	872055	23.3		117	390	
		4.200	0.0	1.000	072033	23.3		117	370	
D 43 13C2-PFT										
715.00 > 670.00	4.498	4.498	0.0		4957023	61.0		122	29783	
42 Perfluorotetr	adecan	oic acid								
712.50 > 668.90	4.507	4.498	0.009	1.000	2113725	24.7		123	838	
713.00 > 169.00	4.498	4.498	0.0	0.998	261455		8.08(0.00-0.00)		5982	
D 44 13C2-PFH							,			
		4 000	0.007		2055407	40.4		04.0	2250	
815.00 > 770.00		4.900	0.007		2055406	48.4		96.8	3258	
45 Perfluorohex	kadecan	oic acid								
813.00 > 769.00	4.907	4.910	-0.003	1.000	788248	20.3		102	123	
46 Perfluorooct	adecan	oic acid								
913.00 > 869.00			-0 002	1.000	762631	19.7		98.7	347	
/10.00 / 00/.00	J.ZTI	5.275	0.002	1.000	702031	17.7		70.1	J-7 /	

Chrom Revision: 2.2 26-Jun-2017 08:09:44

Report Date: 24-Jul-2017 16:31:37

OC Flag Legend
Processing Flags
NC - Not Calibrated

Report Date: 24-Jul-2017 16:31:37 Chrom Revision: 2.2 26-Jun-2017 08:09:44 TestAmerica Sacramento Data File: \ChromNa\Sacramento\ChromData\A8_N\20170722-45761.b\2017.07.21C_018.d **Injection Date:** 21-Jul-2017 20:59:13 Instrument ID: A8_N Lims ID: LCSD 320-174599/3-A Client ID: Operator ID: SACINSTLCMS01 ALS Bottle#: 15 Worklist Smp#: Injection Vol: 2.0 ul Dil. Factor: 1.0000 Method: Limit Group: LC PFC_DOD ICAL $A8_N$ D 113C4 PFBA 2 Perfluorobutyric acid D 313C5-PFPeA Exp1:m/z 212.90 > 169.00:Moving5PtAverage_x | Exp1:m/z 267.90 > 223.00:Moving5PtAverage_x Exp1:m/z 217.00 > 172.00:Moving5PtAverage_x (000036 X30 000015 X)12 630 00 025 18 10 12 1.2 1.5 0.9 1.2 1.5 1.9 1.8 2.1 1.8 2.1 1.0 1.3 1.6 2.2 2.5 5 Perfluorobutanesulfonic acid 5 Perfluorobutanesulfonic acid 4 Perfluoropentanoic acid Exp1:m/z 262.90 > 219.00:Moving5PtAverage_x Exp1:m/z 298.90 > 80.00:Moving5PtAverage_x3 Exp1:m/z 298.90 > 99.00:Moving5PtAverage_x3 (21- 000018-15-84 6072 ×60 >-48 36 24 12 1.5 1.9 2.1 1.0 1.3 2.2 2.5 1.5 1.8 1.2 1.8 1.6 1.2 2.1 2.4 7 13C2 PFHxA 6 Perfluorohexanoic acid 9 13C4-PFHpA Exp1:m/z 313.00 > 269.00:Moving5PtAverage_; ____ Exp1:m/z 367.00 > 322.00:Moving5PtAverage_x 281 Exp1:m/z 315.00 > 270.00:Moving5PtAverage_ 28 Y (X100000) (0024 000020 × 16) 20 × 16 16 1.8 2.1 2.4 0.9 1.5 2.1 2.0 2.3 2.9 1.5 2.7 1.7 2.6 10 Perfluoroheptanoic acid 8 Perfluorohexanesulfonic acid D 11 1802 PFHxS Exp1:m/z 363.00 > 319.00:Moving5PtAverage_x Exp1:m/z 399.00 > 80.00:Moving5PtAverage_x3 Exp1:m/z 403.00 > 84.00:Moving5PtAverage_x3 (X100000) (X100000) X (X1000000) X (X1000000) X 628 6024 6024 ×20 ≻16- 12 00 1.7 2.0 2.3 2.6 2.9 3.2 1.5 1.8 2.1 2.4 Page 992 rof 1 1.9 2.2 2.5 2.8 1.4 1.6

Report Date: 24-Jul-2017 16:31:37 Chrom Revision: 2.2 26-Jun-2017 08:09:44 Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170722-45761.b\2017.07.21C_018.d D 14 13C4 PFOA 15 Perfluorooctanoic acid 15 Perfluorooctanoic acid Exp1:m/z 413.00 > 369.00:Moving5PtAverage_x Exp1:m/z 417.00 > 372.00:Moving5PtAverage_x Exp1:m/z 413.00 > 169.00:Moving5PtAverage_x X (X100000) (00000 60 60 648 ∑16 ×40 12 24 16 2.3 2.6 2.0 2.9 3.2 2.2 2.5 2.8 2.1 2.4 2.7 3.0 16 Perfluoroheptanesulfonic Acid 17 Perfluorooctane sulfonic acid 17 Perfluorooctane sulfonic acid Exp1:m/z 499.00 > 80.00:Moving5PtAverage_x3 Exp1:m/z 449.00 > 80.00:Moving5PtAverage_x3 Exp1:m/z 499.00 > 99.00:Moving5PtAverage_x3 18 (12 X (X100000) X (X100000) X (X100000) 63- 854**-**0015 00015 ×12 \times_{45} ≻₃₆-27 18 \mathbf{o} 2.7 3.9 2.4 3.0 3.0 4.8 3.3 4.2 2.1 1.5 2.4 20 Perfluorononanoic acid D 18 13C4 PFOS D 19 13C5 PFNA Exp1:m/z 503.00 > 80.00:Moving5PtAverage_x3 Exp1:m/z 468.00 > 423.00:Moving5PtAverage_x Exp1:m/z 463.00 > 419.00:Moving5PtAverage_x 63 021-0218-00015 12 12 (00054 ×45 ×15 27 18 0 2.7 3.0 2.7 3.0 3.3 2.7 3.0 3.3 3.3 3.6 2.4 2.4 2.4 24 Perfluorodecanoic acid D 23 13C2 PFDA D 21 13C8 FOSA Exp1:m/z 513.00 > 469.00:Moving5PtAverage_x Exp1:m/z 506.00 > 78.00:Moving5PtAverage_x3 Exp1:m/z 515.00 > 470.00:Moving5PtAverage_x (0000012 ×) > 9 656 6048 66⁷⁷ Σ_{40} ×55 ≻₃₂-33 24 16 22 11

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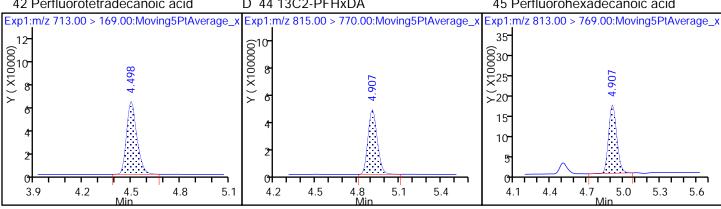
2.6

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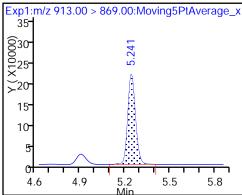
3.6

3.9



Report Date: 24-Jul-2017 16:31:38 Chrom Revision: 2.2 26-Jun-2017 08:09:44

46 Perfluorooctadecanoic acid



FORM I LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: Tes	stAmerica Sacramento	Job No	Job No.: 320-29732-1							
SDG No.:										
Client Sample	e ID:	Lab Sa	Lab Sample ID: LCSD 320-175074/3-A							
Matrix: Water	2	Lab File ID: 2017.07.25B_004.d								
Analysis Meth	nod: 537 (Modified)	Date C	ollecte	d:						
Extraction Me	ethod: 3535	Date E	xtracte	d: 07/20/	2017 09:	:15				
Sample wt/vol	: 250.00(mL)	Date A	Date Analyzed: 07/25/2017 14:31							
Con. Extract	Vol.: 0.50(mL)	 Diluti	Dilution Factor: 1							
Injection Vol	ume: 2(uL)	GC Col	GC Column: GeminiC18 3x100 ID: 3(mm)							
% Moisture:		GPC Cl	GPC Cleanup:(Y/N) N							
Analysis Bato	ch No.: 175951	Units:	Units: ng/L							
CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL				
376-06-7	Perfluorotetradecanoic acid (PFTeA)	64.6	Q	2.5	1.0	0.40				
CAS NO.	ISOTOPE DILU	JTION		%REC Q LIMITS						
STL00998	13C2 PFDoA	·		106		25-150				

Report Date: 26-Jul-2017 11:32:47 Chrom Revision: 2.2 26-Jun-2017 08:09:44

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170726-45877.b\2017.07.25B_004.d

Lims ID: LCSD 320-175074/3-A

Client ID:

Sample Type: LCSD

Inject. Date: 25-Jul-2017 14:31:29 ALS Bottle#: 3 Worklist Smp#: 4

Injection Vol: 2.0 ul Dil. Factor: 1.0000

Sample Info: lcsd 320-175074/3-a Misc. Info.: Plate: 1 Rack: 4

Operator ID: SACINSTLCMS01 Instrument ID: A8_N

Method: \ChromNa\Sacramento\ChromData\A8_N\20170726-45877.b\A8_N.m

Limit Group: LC PFC_DOD ICAL

Last Update: 26-Jul-2017 11:32:34 Calib Date: 23-Jul-2017 13:58:26

Integrator: Picker

Quant Method: Isotopic Dilution Quant By: Initial Calibration

Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20170723-45765.b\2017.07.23ICAL_010.d

Column 1: Det: EXP1

Process Host: XAWRK028

Process Host:	XAWI	RK028								
Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 113C4 PFBA		1.559	0.004		0/04004	CC 7		111	27/50	
217.00 > 172.00 2 Perfluorobut		1.559	0.004		8694084	55.7		111	27658	
212.90 > 169.00	1.563	1.559	0.004	1.000	3734093	24.3		122	1452	
D 3 13C5-PFPe 267.90 > 223.00		1.778	-0.006		6137049	55.5		111	45426	
4 Perfluoropen										
262.90 > 219.00 D 47 13C3-PFB		1.778	-0.006	1.000	2842200	22.2		111	1640	
301.90 > 83.00		1.797	-0.006		157701	NC			6110	
5 Perfluorobuta			0.007	1 000	40027/5	21.0		110	2005	
298.90 > 80.00 298.90 > 99.00		1.806 1.806	-0.006 -0.006	1.000 1.000	4883765 1904784	21.0	2.56(0.00-0.00)	119	3005 2371	
D 7 13C2 PFHx		0.050	0.040		5040005	50.7		447	00750	
315.00 > 270.00 6 Perfluorohex		2.058	-0.018		5942225	58.7		117	33750	
313.00 > 269.00			-0.018	1.000	2446068	21.6		108	4516	
D 9 13C4-PFHp 367.00 > 322.00		2.393	-0.018		5604060	66.9		134	25867	
10 Perfluorohe			-0.010		3004000	00.7		134	23007	
363.00 > 319.00		2.393	-0.018	1.000	2512941	21.8		109	5086	
D 11 18O2 PFH: 403.00 > 84.00		2.409	-0.018		7399790	53.8		114	27979	
8 Perfluorohex	anesulfo									
399.00 > 80.00		2.409	-0.018	1.000	3150128	18.6		102	2564	
D 14 13C4 PFO 417.00 > 372.00		2.756	-0.018		5149543	62.7		125	28749	
15 Perfluorooct										
413.00 > 369.00 413.00 > 169.00		2.756 2.756	-0.018 -0.018	1.000 1.000	2345960 1331040	21.4	1.76(0.90-1.10)	107	561 9350	
					Page 998 of 1	104	``			

Data File:	\\Chr	omNa\S	acrament	to\Chrom	Data\A8_N\201	70726-4587	7.b\2017.07.25B_0	04.d		1
Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
16 Perfluorohe	otanesul	fonic Ac	id							
449.00 > 80.00			-0.018	1.000	3009615	25.0		131	24014	
17 Perfluorooct										
499.00 > 80.00			-0.025	1.000	2359869	20.8	4.75(0.00.4.40)	112	6147	
499.00 > 99.00		3.131	-0.025	1.000	496461		4.75(0.90-1.10)		4207	
D 19 13C5 PFNA 468.00 > 423.00		3 131	-0.016		3690204	56.1		112	15739	
D 18 13C4 PFOS		3.131	-0.010		3070204	30.1		112	13737	
503.00 > 80.00		3.131	-0.025		5133556	47.4		99.3	17189	
20 Perfluoronor	nanoic a	cid								
463.00 > 419.00	3.115	3.140	-0.025	1.000	1636417	21.8		109	3924	
D 21 13C8 FOSA										
506.00 > 78.00		3.487	-0.024		6153090	33.7		67.3	9854	
D 23 13C2 PFD/		0.407	0.005		0500400	(4 0		400	10054	
515.00 > 470.00			-0.025		3589108	64.3		129	10254	
22 Perfluorooct 498.00 > 78.00				1.000	2516051	22.7		113	9416	
24 Perfluorode			-0.034	1.000	2310031	22.1		113	7410	
513.00 > 469.00			-0.025	1.000	1533401	21.8		109	7641	
29 Perfluorodeo										
599.00 > 80.00			-0.025	1.000	1546597	23.1		120	7476	
31 Perfluoround	decanoi	c acid								
563.00 > 519.00	3.798	3.822	-0.024	1.000	1167163	22.5		112	2014	
D 30 13C2 PFUr										
565.00 > 520.00			-0.024		2517866	61.8		124	5644	
37 Perfluorodo			0.001	1 000	1000000	22.0		111	2575	
613.00 > 569.00		4.116	-0.021	1.000	1008288	22.8		114	2575	
D 36 13C2 PFDc 615.00 > 570.00		A 116	-0 021		2376327	53.2		106	4607	
41 Perfluorotrid			-0.021		2370327	33.2		100	4007	
663.00 > 619.00			-0.022	1.000	984492	24.3		122	324	
42 Perfluorotetr	radecan	oic acid								
712.50 > 668.90	4.604	4.614	-0.010	1.000	2950665	32.3		162	224	
713.00 > 169.00	4.593	4.614	-0.021	0.998	368857		8.00(0.00-0.00)		5069	
D 43 13C2-PFT6										
715.00 > 670.00			-0.010		6447544	79.4		159	29130	
45 Perfluorohex				1 000	007000	00.4		447	450	
813.00 > 769.00		5.025	-0.016	1.000	907022	23.4		117	150	
D 44 13C2-PFHx 815.00 > 770.00		5.025	-0.016		2321851	56.2		112	3589	
			-0.010		Z3Z1031	50.∠		112	3307	
46 Perfluorooct 913.00 > 869.00		5.383	-0.016	1.000	818572	22.5		113	323	
/13.00 / 009.00	5.507	5.505	0.010	1.000	010072	22.5		113	525	

Chrom Revision: 2.2 26-Jun-2017 08:09:44

Report Date: 26-Jul-2017 11:32:47

OC Flag Legend
Processing Flags
NC - Not Calibrated

Report Date: 26-Jul-2017 11:32:47 Chrom Revision: 2.2 26-Jun-2017 08:09:44 TestAmerica Sacramento Data File: \ChromNa\Sacramento\ChromData\A8_N\20170726-45877.b\2017.07.25B_004.d **Injection Date:** 25-Jul-2017 14:31:29 Instrument ID: A8_N Lims ID: LCSD 320-175074/3-A Client ID: Operator ID: SACINSTLCMS01 ALS Bottle#: 3 Worklist Smp#: Injection Vol: 2.0 ul Dil. Factor: 1.0000 Limit Group: LC PFC_DOD ICAL Method: $A8_N$ 2 Perfluorobutyric acid D 113C4 PFBA D 313C5-PFPeA Exp1:m/z 217.00 > 172.00:Moving5PtAverage_x Exp1:m/z 212.90 > 169.00:Moving5PtAverage_x Exp1:m/z 267.90 > 223.00:Moving5PtAverage_x (000018-(0000015-) > 12-(000001X) 30-30-©28 0024 12 1.2 1.2 1.8 2.1 0.9 1.8 2.1 1.0 1.3 1.6 2.5 5 Perfluorobutanesulfonic acid 4 Perfluoropentanoic acid 5 Perfluorobutanesulfonic acid Exp1:m/z 262.90 > 219.00:Moving5PtAverage_x Exp1:m/z 298.90 > 80.00:Moving5PtAverage_x3 Exp1:m/z 298.90 > 99.00:Moving5PtAverage_x3 961 (X100000) (X1000000) (X100000) (X1000000) (X100000) (X1000000) (X100000) (X1000000) (X100000) (X1000000) (X100000) (X1000000) (X1000000) (X1000000) (X1000000) (X1000000) (X1000000) (X1000000) (X1000000) (X1 ©21**-**0218-684° 672 ×15 36 24 12 1.9 2.2 2.5 1.4 2.0 2.3 1.5 1.8 1.0 1.3 1.6 1.1 2.1 2.4 1.2 7 13C2 PFHxA 6 Perfluorohexanoic acid 9 13C4-PFHpA Exp1:m/z 313.00 > 269.00:Moving5PtAverage_ Exp1:m/z 367.00 > 322.00:Moving5PtAverage_x 24 Y (X100000) (00020 ×16 <u>@</u>24 0020 ×)16 12 1.8 2.1 1.5 1.8 2.1 2.7 2.0 2.3 2.9 1.5 2.4 2.4 1.7 2.6 1.2 10 Perfluoroheptanoic acid D 11 1802 PFHxS 8 Perfluorohexanesulfonic acid Exp1:m/z 403.00 > 84.00:Moving5PtAverage_x3 Exp1:m/z 399.00 > 80.00:Moving5PtAverage_x3 Exp1:m/z 363.00 > 319.00:Moving5PtAverage_x (X100000) (X100000) 030 025 10 0 0 1.8 2.1 2.4 2.7 3.0 2.9 1.9 2.2 2.5 2.8 3.1 1.5 1.7 1.6

Report Date: 26-Jul-2017 11:32:47 Chrom Revision: 2.2 26-Jun-2017 08:09:44 Data File: \ChromNa\Sacramento\ChromData\A8_N\20170726-45877.b\2017.07.25B_004.d D 14 13C4 PFOA 15 Perfluorooctanoic acid 15 Perfluorooctanoic acid Exp1:m/z 417.00 > 372.00:Moving5PtAverage_x Exp1:m/z 413.00 > 369.00:Moving5PtAverage_x Exp1:m/z 413.00 > 169.00:Moving5PtAverage_x 56**-**(0000018 (0000015) 12 91- 0048 X40 ×65 ≻52 24 39 16 26**-**13 2.3 2.8 2.7 2.0 2.6 2.9 3.2 3.5 2.2 2.5 3.1 2.1 2.4 3.0 3.3 16 Perfluoroheptanesulfonic Acid 17 Perfluorooctane sulfonic acid 17 Perfluorooctane sulfonic acid Exp1:m/z 449.00 > 80.00:Moving5PtAverage_x3 Exp1:m/z 499.00 > 80.00:Moving5PtAverage_x3 Exp1:m/z 499.00 > 99.00:Moving5PtAverage_x3 18 (000010 X) X 0015 00015 ×12 **∑**50 30 20 10 2.3 2.9 3.2 2.5 3.1 3.7 2.2 2.6 3.5 2.8 3.4 4.0 4.6 D 19 13C5 PFNA D 18 13C4 PFOS 20 Perfluorononanoic acid Exp1:m/z 468.00 > 423.00:Moving5PtAverage_x Exp1:m/z 503.00 > 80.00:Moving5PtAverage_x3 Exp1:m/z 463.00 > 419.00:Moving5PtAverage_x (21⁻ (000018-(215-63 0014 00012 X10 0054 ×45 >36 27 18 0 0 2.7 3.0 3.3 2.7 3.0 3.3 2.8 3.6 3.6 2.5 3.1 3.4 3.7 2.4 2.4 D 21 13C8 FOSA D 23 13C2 PFDA 22 Perfluorooctane Sulfonamide Exp1:m/z 515.00 > 470.00:Moving5PtAverage_x Exp1:m/z 506.00 > 78.00:Moving5PtAverage_x3 Exp1:m/z 498.00 > 78.00:Moving5PtAverage_x3 Y (X100000) (000020 X) 16 014 0012 ∑₁₀

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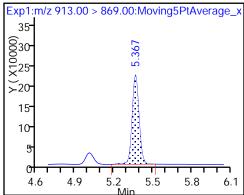
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Report Date: 26-Jul-2017 11:32:47 Chrom Revision: 2.2 26-Jun-2017 08:09:44

46 Perfluorooctadecanoic acid



FORM I LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento	Job No.: <u>320-29732-1</u>
SDG No.:	
Client Sample ID:	Lab Sample ID: LCSD 320-175097/3-A
Matrix: Water	Lab File ID: 2017.07.23A_004.d
Analysis Method: 537 (Modified)	Date Collected:
Extraction Method: 3535	Date Extracted: 07/20/2017 10:13
Sample wt/vol: 250(mL)	Date Analyzed: 07/23/2017 14:53
Con. Extract Vol.: 0.50(mL)	Dilution Factor: 1
Injection Volume: 2(uL)	GC Column: GeminiC18 3x100 ID: 3(mm)
% Moisture:	GPC Cleanup:(Y/N) N
Analysis Batch No · 175528	IInits: na/I.

CAS NO.	COMPOUND NAME	COMPOUND NAME RESULT Q				
375-22-4	Perfluorobutanoic acid (PFBA)	45.8		2.5	1.0	0.46
2706-90-3	Perfluoropentanoic acid (PFPeA)	43.1		2.5	2.0	0.99
307-24-4	Perfluorohexanoic acid (PFHxA)	43.2		2.5	2.0	0.79
375-85-9	Perfluoroheptanoic acid (PFHpA)	42.3		2.5	2.0	0.80
335-67-1	Perfluorooctanoic acid (PFOA)	41.6		2.5	2.0	0.75
375-95-1	Perfluorononanoic acid (PFNA)	40.9		2.5	2.0	0.65
335-76-2	Perfluorodecanoic acid (PFDA)	39.8		2.5	1.0	0.44
2058-94-8	Perfluoroundecanoic acid (PFUnA)	42.6		2.5	2.0	0.75
307-55-1	Perfluorododecanoic acid (PFDoA)	45.0		2.5	2.0	0.58
72629-94-8	Perfluorotridecanoic Acid (PFTriA)	48.6		2.5	2.0	0.55
375-73-5	Perfluorobutanesulfonic acid (PFBS)	39.5		2.5	2.0	0.92
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	35.3		2.5	2.0	0.87
375-92-8	Perfluoroheptanesulfonic Acid (PFHpS)	45.3		2.5	2.0	0.71
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	41.3		4.0	3.0	1.3
335-77-3	Perfluorodecanesulfonic acid (PFDS)	43.3		4.0	3.0	1.2
754-91-6	Perfluorooctane Sulfonamide (FOSA)	44.6		40	2.0	0.64

FORM I LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento	Job No.: 320-29732-1
SDG No.:	
Client Sample ID:	Lab Sample ID: LCSD 320-175097/3-A
Matrix: Water	Lab File ID: 2017.07.23A_004.d
Analysis Method: 537 (Modified)	Date Collected:
Extraction Method: 3535	Date Extracted: 07/20/2017 10:13
Sample wt/vol: 250(mL)	Date Analyzed: 07/23/2017 14:53
Con. Extract Vol.: 0.50(mL)	Dilution Factor: 1
Injection Volume: 2(uL)	GC Column: GeminiC18 3x100 ID: 3(mm)
% Moisture:	GPC Cleanup:(Y/N) N
Analysis Batch No.: 175528	Units: ng/L

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL01056	13C8 FOSA	25		25-150
STL00992	13C4 PFBA	111		25-150
STL00993	13C2 PFHxA	105		25-150
STL00990	13C4 PFOA	116		25-150
STL00995	13C5 PFNA	105		25-150
STL00996	13C2 PFDA	128		25-150
STL00997	13C2 PFUnA	104		25-150
STL00998	13C2 PFDoA	94		25-150
STL00994	1802 PFHxS	108		25-150
STL00991	13C4 PFOS	95		25-150
STL01892	13C4-PFHpA	124		25-150
STL01893	13C5 PFPeA	104		25-150

Report Date: 24-Jul-2017 12:07:26 Chrom Revision: 2.2 26-Jun-2017 08:09:44

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \ChromNa\Sacramento\ChromData\A8_N\20170724-45776.b\2017.07.23A_004.d

Lims ID: LCSD 320-175097/3-A

Client ID:

Sample Type: LCSD

Inject. Date: 23-Jul-2017 14:53:38 ALS Bottle#: 3 Worklist Smp#: 4

Injection Vol: 2.0 ul Dil. Factor: 1.0000

Sample Info: lcsd 320-175097/3-a Misc. Info.: Plate: 1 Rack: 4

Operator ID: SACINSTLCMS01 Instrument ID: A8_N

Method: \ChromNa\Sacramento\ChromData\A8_N\20170724-45776.b\A8_N.m

Limit Group: LC PFC_DOD ICAL

Last Update: 24-Jul-2017 12:07:17 Calib Date: 23-Jul-2017 13:58:26

Integrator: Picker

Quant Method: Isotopic Dilution Quant By: Initial Calibration

Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20170723-45765.b\2017.07.23ICAL_010.d

Column 1: Det: EXP1

Process Host: XAWRK004

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
2 Perfluorobut	yric acid									
212.90 > 169.00	•	1.556	-0.002	1.000	3509487	22.9		114	1684	
D 113C4 PFBA										
217.00 > 172.00	1.554	1.556	-0.002		8691501	55.7		111	39031	
4 Perfluoroper			0.011	4 000	0577000	0.1 (100	1.0.	
262.90 > 219.00		1.775	-0.011	1.000	2577000	21.6		108	1626	
D 3 13C5-PFP6 267.90 > 223.00		1.775	0.011		5736917	51.9		104	65141	
D 47 13C3-PFB		1.775	-0.011		3730717	31.7		104	03141	
301.90 > 83.00		1.793	-0.002		147917	NC			4337	
5 Perfluorobut	anesulfo	nic acid								
298.90 > 80.00		1.802	-0.011	1.000	4388253	19.8		112	2753	
298.90 > 99.00	1.791	1.802	-0.011	1.000	1735452		2.53(0.00-0.00)		1992	
61 Sodium 1H,		•								
327.00 > 307.00			-0.014	1.000	1121684	20.6		111	32124	
6 Perfluorohex 313.00 > 269.00			0.002	1.000	2177758	21.6		108	4519	
D 7 13C2 PFHx		2.033	-0.003	1.000	2177750	21.0		100	4317	
315.00 > 270.00		2.055	-0.003		5297800	52.4		105	42103	
10 Perfluorohe										
363.00 > 319.00	•		-0.014	1.000	2262028	21.1		106	4587	
D 9 13C4-PFHp	Α									
367.00 > 322.00	2.389	2.403	-0.014		5213510	62.2		124	30328	
8 Perfluorohex										
399.00 > 80.00	2.405	2.419	-0.014	1.000	2851067	17.7		97.1	2396	
D 11 18O2 PFH		0.446			7050050	54.0		100	10016	
403.00 > 84.00		2.419			7053358	51.3		108	49342	
13 Sodium 1H, 427.00 > 407.00		-			1236293	24.7		130	33279	
427.00 > 407.00	2.733	2.142	-0.007	1.000	1230293	24.7		130	33219	

Report Date: 24-Jul-2017 12:07:26 Chrom Revision: 2.2 26-Jun-2017 08:09:44

Data File:				to\Chrom			26-Jun-2017 08:09 6.b\2017.07.23A_00			
Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 12 M2-6:2FT 429.00 > 409.00		2.742	-0.007		2656345	55.9		118	33980	
15 Perfluorood 413.00 > 369.00 413.00 > 169.00	2.764 2.764	2.771	-0.007 -0.007	1.000 1.000	2108815 1287952	20.8	1.64(0.90-1.10)	104	586 7582	
D 14 13C4 PFC 417.00 > 372.00	2.764		-0.007		4754215	57.9		116	36991	
16 Perfluorohe 449.00 > 80.00	2.771	2.778	-0.007	1.000	2623556	22.7		119	25321	
17 Perfluorood 499.00 > 80.00 499.00 > 99.00	3.149 3.149	3.151 3.151		1.000 1.000	2256085 444425	20.7	5.08(0.90-1.10)	111	98576 2784	
20 Perfluorono 463.00 > 419.00	3.149	cid 3.151	-0.002	1.000	1431322	20.5		102	5136	
D 18 13C4 PFC 503.00 > 80.00	3.140	3.151	-0.011		4936070	45.6		95.4	18984	
D 19 13C5 PFN 468.00 > 423.00	3.149		-0.002		3436772	52.3		105	18774	
25 Sodium 1H 527.00 > 507.00	3.498	H-perflu 3.497		ne 1.000	1152681	23.3		121	21490	
D 26 M2-8:2FT: 529.00 > 509.00	3.498	3.497	0.001		2604796	71.4		149	14906	
D 21 13C8 FOS 506.00 > 78.00	3.498		-0.009		2291784	12.5		25.1	15226	
22 Perfluorood 498.00 > 78.00	3.498		e -0.009	1.000	922281	22.3		112	9050	
D 23 13C2 PFD 515.00 > 470.00		3.507	0.0		3583884	64.2		128	10977	
24 Perfluorode 513.00 > 469.00		cid 3.507	0.0	1.000	1398219	19.9		99.5	6124	
D 27 d3-NMeF0 573.00 > 419.00		3.658	0.005		1027237	47.3		94.5	9386	
28 N-methyl p 570.00 > 419.00		ctane su 3.669		1.003	476585	25.5		127	9026	
29 Perfluorode 599.00 > 80.00		lfonic ac 3.815	id 0.002	1.000	1392460	21.7		112	12023	
D 32 d5-NEtFO 589.00 > 419.00		3.824	0.010		1046491	47.7		95.4	3472	
31 Perfluorour 563.00 > 519.00		acid 3.833	0.001	1.000	932030	21.3		107	2284	
33 N-ethyl per 584.00 > 419.00		ane sulfo 3.833	onamid 0.001	1.000	438745	24.7		123	5336	
D 30 13C2 PFU 565.00 > 520.00		3.833	0.001		2122146	52.1		104	9925	
37 Perfluorodo 613.00 > 569.00		c acid 4.123	0.006	1.000	875818	22.5		113	980	
D 36 13C2 PFD 615.00 > 570.00		4.123	0.006		Page 1008 of	1104 ^{46.9}		93.7	6819	

Report Date: 24-Jul-2017 12:07:26 Chrom Revision: 2.2 26-Jun-2017 08:09:44 Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170724-45776.b\2017.07.23A_004.d

Data File.	NOTIFE	iiiiva	Cramen	.0101110111	Data A0_111201	10124-43111	0.b/2017.07.23A_00	74.u		
Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
41 Perfluorotrid 663.00 > 619.00		acid 4.388	0.009	1.000	866332	24.3		122	328	
D 43 13C2-PFT		1.000	0.007	1.000	000002	21.0		122	020	
715.00 > 670.00 42 Perfluorotetr		4.619	0.011		6742474	83.0		166	40301	
712.50 > 668.90	4.640	4.630	0.010	1.000	2750203	34.2		171	264	
713.00 > 169.00 45 Perfluorohe		4.630	-0.001	0.998	373628		7.36(0.00-0.00)		6590	
813.00 > 769.00		5.030	0.013	1.000	786258	23.1		115	195	
D 44 13C2-PFHx 815.00 > 770.00		5.030	0.013		2000945	48.4		96.9	5398	
46 Perfluorooct			0.044	1 000	(07100	24 =		407	004	
913.00 > 869.00	5.392	5.381	0.011	1.000	687122	21.5		107	301	

OC Flag Legend Processing Flags

NC - Not Calibrated

Report Date: 24-Jul-2017 12:07:26 Chrom Revision: 2.2 26-Jun-2017 08:09:44 TestAmerica Sacramento Data File: \ChromNa\Sacramento\ChromData\A8_N\20170724-45776.b\2017.07.23A_004.d **Injection Date:** 23-Jul-2017 14:53:38 Instrument ID: A8_N Lims ID: LCSD 320-175097/3-A Client ID: Operator ID: SACINSTLCMS01 ALS Bottle#: 3 Worklist Smp#: Injection Vol: 2.0 ul Dil. Factor: 1.0000 Method: Limit Group: LC PFC_DOD ICAL $A8_N$ 2 Perfluorobutyric acid D 113C4 PFBA 4 Perfluoropentanoic acid Exp1:m/z 212.90 > 169.00:Moving5PtAverage_x Exp1:m/z 217.00 > 172.00:Moving5PtAverage_x Exp1:m/z 262.90 > 219.00:Moving5PtAverage_x (018 (000 (15 (X100000) X. ∑30 18 12 1.2 1.5 1.8 2.1 1.1 1.4 2.0 1.1 1.4 2.0 2.3 5 Perfluorobutanesulfonic acid 5 Perfluorobutanesulfonic acid D 3 13C5-PFPeA Exp1:m/z 267.90 > 223.00:Moving5PtAverage_x Exp1:m/z 298.90 > 80.00:Moving5PtAverage x3 Exp1:m/z 298.90 > 99.00:Moving5PtAverage x3 (21⁻ (00018⁻ ×15⁻ 77 0066 (00001 20-20-33 22 11 2.5 1.3 1.9 2.2 1.4 2.0 2.3 1.5 1.8 1.0 1.6 1.1 2.1 2.4 1.2 61 Sodium 1H,1H,2H,2H-perfluorohexan& Perfluorohexanoic acid 7 13C2 PFHxA Exp1:m/z 327.00 > 307.00:Moving5PtAverage_x | Exp1:m/z 313.00 > 269.00:Moving5PtAverage_x Exp1:m/z 315.00 > 270.00:Moving5PtAverage_x Y (X100000) (24⁻ 00020 649 0042 ∑₁₆-×35 ≻₂₈ 01 2.0 2.3 2.6 1.0 2.2 2.8 1.5 1.8 2.1 1.4 1.7 1.6 2.4 2.7 9 13C4-PFHpA 10 Perfluoroheptanoic acid D 8 Perfluorohexanesulfonic acid Exp1:m/z 367.00 > 322.00:Moving5PtAverage_x Exp1:m/z 363.00 > 319.00:Moving5PtAverage_x Exp1:m/z 399.00 > 80.00:Moving5PtAverage_x3 (X100000) Y (X100000) (21°00018° (21°00018° (21°0018° (21°0018° (21°0018°) 0 0| 1.9 2.2 2.5 2.8 3.1 1.7 2.9 1.9 2.2 2.5 2.8 3.1 1.6 1.6

Report Date: 24-Jul-2017 12:07:26 Chrom Revision: 2.2 26-Jun-2017 08:09:44 Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170724-45776.b\2017.07.23A_004.d D 11 1802 PFHxS 13 Sodium 1H,1H,2H,2H-perfluoroocta De 12 M2-6:2FTS Exp1:m/z 403.00 > 84.00:Moving5PtAverage_x3 (X100000) (X100000) 8 028 024 <u>≻</u>20 ≻₁₆ ≻28 12 21 14 2.4 2.7 1.8 2.1 2.7 3.0 3.3 2.0 2.3 2.6 2.9 3.2 3.5 2.1 2.4 3.0 3.3 1.5 15 Perfluorooctanoic acid 15 Perfluorooctanoic acid D 14 13C4 PFOA Exp1:m/z 417.00 > 372.00:Moving5PtAverage_> Exp1:m/z 413.00 > 169.00:Moving5PtAverage_) Exp1:m/z 413.00 > 369.00:Moving5PtAverage_x (018 15 12 649 642 ©72 ∑60 \times_{35} **≻**48 ≻₂₈-36 21 24 14 12 2.8 2.5 2.5 2.8 2.3 3.1 3.1 3.5 16 Perfluoroheptanesulfonic Acid 17 Perfluorooctane sulfonic acid 17 Perfluorooctane sulfonic acid Exp1:m/z 449.00 > 80.00:Moving5PtAverage_x3 Exp1:m/z 499.00 > 99.00:Moving5PtAverage_x3 Exp1:m/z 499.00 > 80.00:Moving5PtAverage_x3 70 (X100000) 060 ×50 0015 0015 12 12 ∑40 30 20 10 0 2.3 2.9 3.2 3.5 2.6 3.2 3.8 2.0 2.6 3.4 2.0 0.4 20 Perfluorononanoic acid D 18 13C4 PFOS D 19 13C5 PFNA Exp1:m/z 463.00 > 419.00:Moving5PtAverage_x Exp1:m/z 503.00 > 80.00:Moving5PtAverage_x3 Exp1:m/z 468.00 > 423.00:Moving5PtAverage_) (000012 1000012 1000012 (00048 (00048 (00048 (0000018 X) 12 24

3.0

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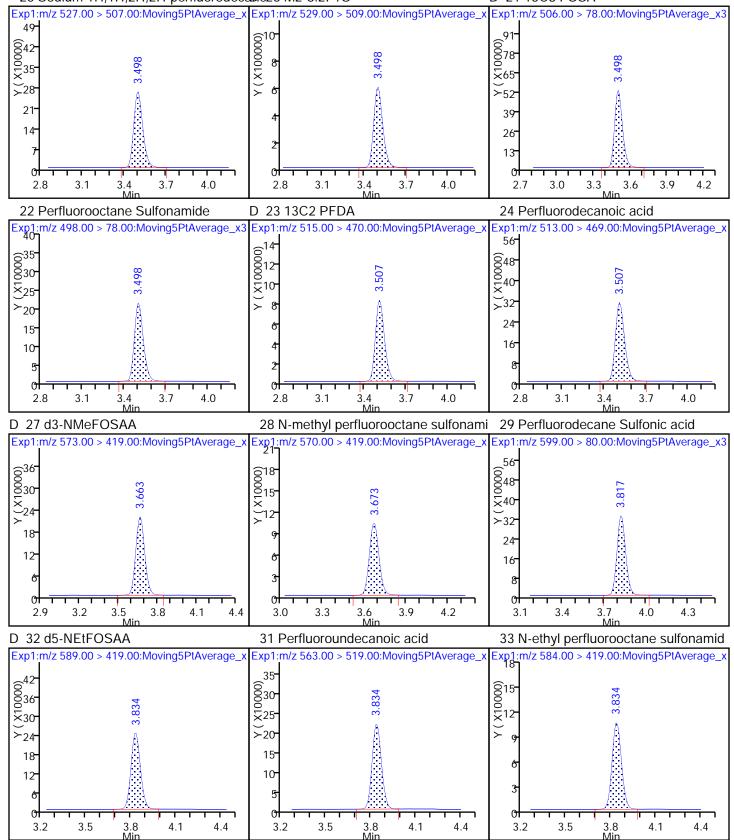
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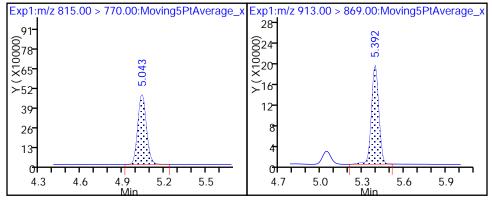
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Report Date: 24-Jul-2017 12:07:26 Chrom Revision: 2.2 26-Jun-2017 08:09:44

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170724-45776.b\2017.07.23A_004.d

D 44 13C2-PFHxDA

46 Perfluorooctadecanoic acid



FORM I LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: Tes	tAmerica Sacramento	Job No	Job No.: 320-29732-1							
SDG No.:										
Client Sample	ID:	Lab Sa	Lab Sample ID: LCSD 320-175742/3-A							
Matrix: Water		Lab Fi	Lab File ID: 2017.07.27C_004.d							
Analysis Meth	od: 537 (Modified)	Date C	ollecte	ed:						
Extraction Me	thod: 3535	Date E	xtracte	d: <u>07/25/</u>	2017 09:	:12				
Sample wt/vol	: 250.00(mL)	Date A	nalyzed	07/27/20	17 21:09	9				
Con. Extract	Vol.: 0.50(mL)	Diluti	Dilution Factor: 1							
Injection Vol	ume: 2(uL)	GC Col	umn: Ge	miniC18 3x	100 ID: 3	3 (mm)				
% Moisture: _		GPC Cl	GPC Cleanup:(Y/N) N							
Analysis Bato	h No.: 176487	Units:	Units: ng/L							
CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL				
754-91-6	Perfluorooctane Sulfonamide (FOSA)	45.0		40	2.0	0.64				
CAS NO.	ISOTOPE DILU	UTION		%REC	Q	LIMITS				

25-150

55

STL01056

13C8 FOSA

Report Date: 28-Jul-2017 14:14:17 Chrom Revision: 2.2 26-Jun-2017 08:09:44

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170728-45994.b\2017.07.27C_004.d

Lims ID: LCSD 320-175742/3-A

Client ID:

Sample Type: LCSD

Inject. Date: 27-Jul-2017 21:09:34 ALS Bottle#: 27 Worklist Smp#: 4

Injection Vol: 2.0 ul Dil. Factor: 1.0000

Sample Info: lcsd 320-175742/3-Misc. Info.: Plate: 1 Rack: 3

Operator ID: SACINSTLCMS01 Instrument ID: A8_N

Method: \ChromNa\Sacramento\ChromData\A8_N\20170728-45994.b\A8_N.m

Limit Group: LC PFC_DOD ICAL

Last Update: 28-Jul-2017 14:14:10 Calib Date: 23-Jul-2017 13:58:26

Integrator: Picker

Quant Method: Isotopic Dilution Quant By: Initial Calibration

Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20170723-45765.b\2017.07.23ICAL_010.d

Column 1: Det: EXP1

Process Host: XAWRK013

First Level Reviewer: barnettj Date: 28-Jul-2017 13:45:16

First Level Reviewer: barnettj Date: 28-Jul-2017 13:						28-Jul-2017 13:45:1 <i>6</i>)			
Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
2 Perfluorobuty	vric acid									
212.90 > 169.00	•	1.565	0.007	1.000	3367159	22.3		111	1000	
D 113C4 PFBA										
217.00 > 172.00	1.572	1.565	0.007		8571854	54.9		110	20966	
4 Perfluoropen										
262.90 > 219.00	1.791	1.784	0.007	1.000	2551399	19.3		96.6	1052	
D 3 13C5-PFPe										
267.90 > 223.00		1.784	0.007		6336770	57.3		115	37387	
D 47 13C3-PFBS		1 000	0.007		140110	NIC			2004	
301.90 > 83.00		1.802	0.007		140118	NC			3894	
5 Perfluorobuta 298.90 > 80.00	anesulto 1.819	1.812	0.007	1.000	4050632	17.3		97.7	2837	
298.90 > 99.00		1.812	0.007	1.000	1687588	17.5	2.40(0.00-0.00)	71.1	2102	
61 Sodium 1H,							,			
327.00 > 307.00		•	0.008	1.000	1372201	21.0		113	55086	
6 Perfluorohex	anoic ac	id								
313.00 > 269.00	2.062	2.054	0.008	1.000	2450201	21.3		106	3342	
D 7 13C2 PFHx										
315.00 > 270.00	2.062	2.054	0.008		6042404	59.7		119	20869	
10 Perfluorohe _l										
363.00 > 319.00		2.385	0.014	1.000	2397948	19.8		98.8	1793	
D 9 13C4-PFHp		0.005	0.014		5044000	70.5		4.44	4.4.00	
367.00 > 322.00		2.385	0.014		5911933	70.5		141	14600	
8 Perfluorohex 399.00 > 80.00		onic acid 2.401	0.014	1.000	2945465	17.3		94.9	2223	
D 11 18O2 PFH		2.401	0.014	1.000	2745405	17.3		74.7	2223	
403.00 > 84.00		2.401	0.014		7452632	54.2		115	15180	
13 Sodium 1H,				e	7702032	JT.2		115	10100	
427.00 > 407.00			0.023	1.000	Page35016 of	110420.5		108	25429	
					. ago ro lo ol	110-				

Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20170728-45994.b\2017.07.27C_004.d									
Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 12 M2-6:2FTS 429.00 > 409.00		2.711	0.023		3191876	67.1		141	17537	
15 Perfluorooct 413.00 > 369.00	2.755	2.740	0.015	1.000	2193157	19.1	(95.4	429	
413.00 > 169.00 D 14 13C4 PFO. 417.00 > 372.00	A	2.740	0.015	1.000	1251365 5389406	65.6	1.75(0.90-1.10)	131	5360 16953	
16 Perfluorohe 449.00 > 80.00	ptanesul	fonic Ac		1.000	2722833	23.4		123	15998	
20 Perfluorono 463.00 > 419.00		cid 3.111	0.020	1.000	1580560	19.7		98.3	3015	
17 Perfluorooct										
499.00 > 80.00 499.00 > 99.00 D 19 13C5 PFN	3.131	3.111 3.111	0.020 0.020	1.000 1.000	2240191 446933	20.4	5.01(0.90-1.10)	110	5251 2619	
468.00 > 423.00 D 18 13C4 PFO	3.131	3.111	0.020		3949652	60.1		120	12001	
503.00 > 80.00 22 Perfluorooct	3.131	3.111 fonamide	0.020 e		4964401	45.9		96.0	14382	
498.00 > 78.00 25 Sodium 1H,			0.024 orodecar	1.000 ne	2050339	22.5		112	11789	
527.00 > 507.00 D 21 13C8 FOS	A			1.000	1033480	20.8		108	11796	
506.00 > 78.00 D 26 M2-8:2FTS	5	3.454	0.024		5054562	27.7		55.3	8728	
529.00 > 509.00 24 Perfluorode	canoic a		0.024	1 000	2615687	71.7		150	11819	
513.00 > 469.00 D 23 13C2 PFD 515.00 > 470.00	A	3.474	0.013	1.000	1583526 3962240	20.4 71.0		102 142	7103 7753	
28 N-methyl pe 570.00 > 419.00	erfluoroo			1.003	470227	22.3		112	5797	
D 27 d3-NMeFO 573.00 > 419.00	SAA	3.631	0.009		1156573	53.2		106	7476	
29 Perfluorode 599.00 > 80.00		lfonic ac 3.777	id 0.029	1.000	1424870	22.0		114	7328	
D 32 d5-NEtFOS 589.00 > 419.00		3.787	0.027		1166128	53.2		106	2683	
31 Perfluoroun 563.00 > 519.00		acid 3.797	0.017	1.000	953568	18.5		92.5	1641	
33 N-ethyl perfl 584.00 > 419.00	3.814	ane sulfo 3.797	onamid 0.017	1.000	443314	22.4		112	4226	
D 30 13C2 PFUi 565.00 > 520.00	3.814	3.797	0.017		2500101	61.4		123	6649	
D 36 13C2 PFD6 615.00 > 570.00	4.113	4.088	0.025		2319046	51.9		104	3562	
37 Perfluorodo 613.00 > 569.00		4.096	0.017	1.000	Page 1017 of	1104 ^{20.2}		101	1233	

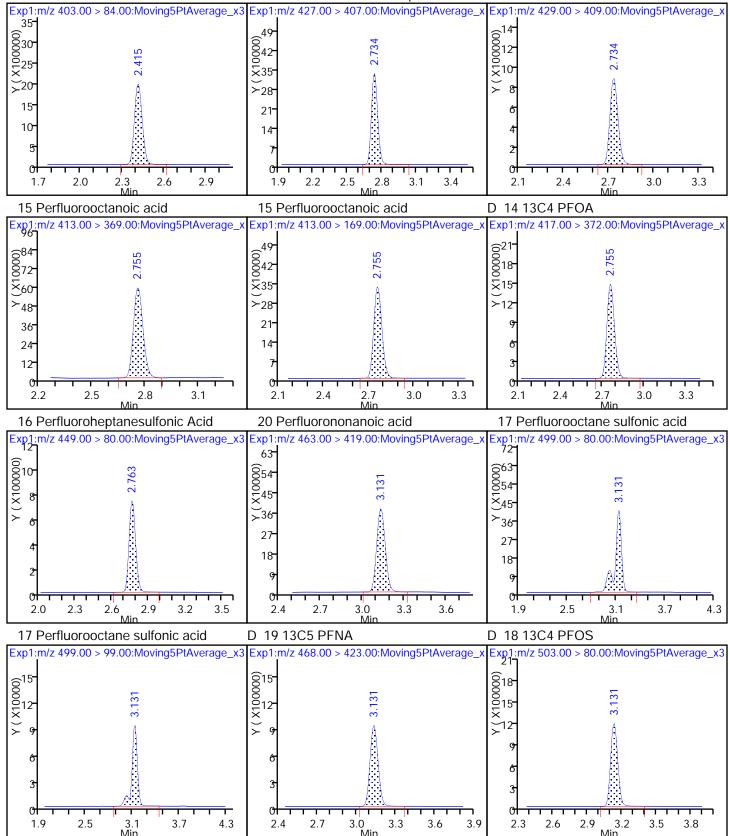
Report Date: 28-Jul-2017 14:14:17 Chrom Revision: 2.2 26-Jun-2017 08:09:44 Data File:

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Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
41 Perfluorotrio	decanoic	acid								
663.00 > 619.00	4.385	4.358	0.027	1.000	981082	24.8		124	217	
42 Perfluorotet	radecan	oic acid								
712.50 > 668.90	4.623	4.593	0.030	1.000	2826328	31.7		159	191	
713.00 > 169.00	4.612	4.593	0.019	0.998	349639		8.08(0.00-0.00)		2923	
D 43 13C2-PFT	eDA									
715.00 > 670.00	4.623	4.593	0.030		6961203	85.7		171	5742	
D 44 13C2-PFH	xDA									
815.00 > 770.00	5.036	5.005	0.031		2358292	57.1		114	1617	
45 Perfluorohe	xadecan	oic acid								
813.00 > 769.00	5.036	5.015	0.021	1.000	892745	23.6		118	167	
46 Perfluorooc	tadecand	oic acid								
913.00 > 869.00	5.384	5.365	0.019	1.000	827661	23.3		117	223	

QC Flag Legend Processing Flags

NC - Not Calibrated

Report Date: 28-Jul-2017 14:14:17 Chrom Revision: 2.2 26-Jun-2017 08:09:44 TestAmerica Sacramento Data File: **Injection Date:** 27-Jul-2017 21:09:34 Instrument ID: A8_N Lims ID: LCSD 320-175742/3-A Client ID: Operator ID: SACINSTLCMS01 ALS Bottle#: 27 Worklist Smp#: Injection Vol: 2.0 ul Dil. Factor: 1.0000 Method: Limit Group: LC PFC_DOD ICAL $A8_N$ 2 Perfluorobutyric acid D 113C4 PFBA 4 Perfluoropentanoic acid Exp1:m/z 212.90 > 169.00:Moving5PtAverage_x | Exp1:m/z 217.00 > 172.00:Moving5PtAverage_x | Exp1:m/z 262.90 > 219.00:Moving5PtAverage_x (0000012⁻ X10000012⁻ X10⁻ 635 600 30 Y (X100000) \succ 20 15 10 1.2 1.5 1.8 1.8 2.1 1.1 1.4 2.0 1.2 1.5 2.1 5 Perfluorobutanesulfonic acid 5 Perfluorobutanesulfonic acid D 3 13C5-PFPeA Exp1:m/z 298.90 > 80.00:Moving5PtAverage_x3 Exp1:m/z 267.90 > 223.00:Moving5PtAverage_x Exp1:m/z 298.90 > 99.00:Moving5PtAverage_x3 0018 000015 X ©28 0024 677 666 ×20 12 33 22 11 1.8 1.8 2.1 2.4 2.7 1.5 2.1 2.4 1.9 2.2 1.2 1.5 1.6 1.3 61 Sodium 1H,1H,2H,2H-perfluorohexan& Perfluorohexanoic acid 7 13C2 PFHxA Exp1:m/z 327.00 > 307.00:Moving5PtAverage_x Exp1:m/z 313.00 > 269.00:Moving5PtAverage_) Exp1:m/z 315.00 > 270.00:Moving5PtAverage_x Y (X100000) (00001 0020 (00054- ×45 <u>≻</u>16• 27 18 2.0 1.5 1.8 2.1 1.8 2.1 8.0 1.4 2.6 3.2 1.2 2.4 1.5 2.4 2.7 8 Perfluorohexanesulfonic acid 10 Perfluoroheptanoic acid D 9 13C4-PFHpA Exp1:m/z 367.00 > 322.00:Moving5PtAverage_x Exp1:m/z 399.00 > 80.00:Moving5PtAverage_x3 Exp1:m/z 363.00 > 319.00:Moving5PtAverage_x Y (X100000) (X100000) 0024 0020 20 116 0| 1.8 2.1 2.4 2.7 3.3 1.7 2.9 1.9 2.2 2.5 2.8 3.1 1.5 3.0 1.6



Report Date: 28-Jul-2017 14:14:17 Chrom Revision: 2.2 26-Jun-2017 08:09:44 Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170728-45994.b\2017.07.27C_004.d

22 Perfluorooctane Sulfonamide 25 Sodium 1H,1H,2H,2H-perfluorodecable21 13C8 FOSA Exp1:m/z 498.00 > 78.00:Moving5PtAverage_x3 21-(000018-X) 12-684 0072 ©36-30-×60 <u>~</u>24 **≻**48 18 36 12 24 12 2.6 2.9 3.2 3.5 3.8 4.1 2.8 3.1 3.4 3.7 4.0 2.7 3.0 3.3 3.6 3.9 4.2 D 26 M2-8:2FTS 24 Perfluorodecanoic acid D 23 13C2 PFDA Exp1:m/z 515.00 > 470.00:Moving5PtAverage_) Exp1:m/z 529.00 > 509.00:Moving5PtAverage_x Exp1:m/z 513.00 > 469.00:Moving5PtAverage_> Y (X100000) 014 0012 (56⁻ 0048⁻ ∑₁₀ ×40 ≻₃₂-24 16 \mathbf{o} 3.4 3.7 4.0 3.5 3.0 3.1 3.8 3.3 3.6 3.9 28 N-methyl perfluorooctane sulfonamiD 27 d3-NMeFOSAA 29 Perfluorodecane Sulfonic acid Exp1:m/z 570.00 > 419.00:Moving5PtAverage_x Exp1:m/z 573.00 > 419.00:Moving5PtAverage_) Exp1:m/z 599.00 > 80.00:Moving5PtAverage_x3 21 56 0018 ×15 ×12 042 036 0048 ×40 ×30 **≻**24 24 18 12 16 0 0 3.3 3.6 3.9 4.2 3.5 3.8 3.0 2.8 3.1 3.4 3.7 4.0 4.3 3.2 4.1 4.4 D 32 d5-NEtFOSAA 31 Perfluoroundecanoic acid 33 N-ethyl perfluorooctane sulfonamid Exp1:m/z 589.00 > 419.00:Moving5PtAverage_x Exp1:m/z 584.00 > 419.00:Moving5PtAverage_x Exp1:m/z 563.00 > 519.00:Moving5PtAverage_x (18-(00015 X)12-(42 00 36 X30 0036 \times 30 ≻24 **≻**24 18 18 12 12 0 3.8 /lin 3.4 3.7 4.0 4.3 4.6 3.4 3.7 4.0 4.3 4.6 3.2 3.5 4.1 4.4 3.1 3.1

Chrom Revision: 2.2 26-Jun-2017 08:09:44

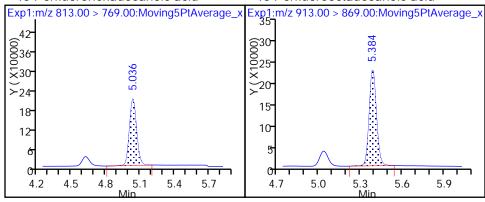
Report Date: 28-Jul-2017 14:14:17

Report Date: 28-Jul-2017 14:14:17 Chrom Revision: 2.2 26-Jun-2017 08:09:44

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170728-45994.b\2017.07.27C_004.d

45 Perfluorohexadecanoic acid

46 Perfluorooctadecanoic acid



Lab Name: TestAmerica Sacramento	Job No.: 320-29732-1
SDG No.:	
Instrument ID: A8_N	Start Date: 07/20/2017 17:08
Analysis Batch Number: 175252	End Date: 07/20/2017 18:18

LAB SAMPLE ID	CLIENT SAMPLE ID	DATE ANALYZED	DILUTION FACTOR	LAB FILE ID	COLUMN ID
7.7.7.7.		07/20/2017 17:08	1		GeminiC18 3x100 3(mm)
IC 320-175252/3		07/20/2017 17:15	1	2017.07.20ICAL_ 003.d	GeminiC18 3x100 3 (mm)
IC 320-175252/4		07/20/2017 17:22	1	2017.07.20ICAL_ 004.d	GeminiC18 3x100 3 (mm)
IC 320-175252/5		07/20/2017 17:29	1	2017.07.20ICAL_ 005.d	GeminiC18 3x100 3(mm)
IC 320-175252/6		07/20/2017 17:36	1	2017.07.20ICAL_ 006.d	GeminiC18 3x100 3(mm)
IC 320-175252/7		07/20/2017 17:43	1	2017.07.20ICAL_ 007.d	GeminiC18 3x100 3(mm)
IC 320-175252/8		07/20/2017 17:50	1	2017.07.20ICAL_ 008.d	GeminiC18 3x100 3(mm)
IC 320-175252/9		07/20/2017 17:57	1	2017.07.20ICAL_ 009.d	GeminiC18 3x100 3(mm)
IC 320-175252/10		07/20/2017 18:04	1	2017.07.20ICAL_ 010.d	GeminiC18 3x100 3(mm)
ICB 320-175252/11		07/20/2017 18:11	1		GeminiC18 3x100 3(mm)
ICV 320-175252/12		07/20/2017 18:18	1	2017.07.20ICAL_ 012.d	GeminiC18 3x100 3(mm)

Lab Name: TestAmerica Sacramento	Job No.: 320-29732-1					
SDG No.:						
Instrument ID: A8_N	Start Date: 07/21/2017 11:54					
Analysis Batch Number: 175391	End Date: 07/21/2017 12:28					

LAB SAMPLE ID	CLIENT SAMPLE ID	DATE ANALYZED	DILUTION	LAB FILE ID	COLUMN ID
CCVL 320-175391/2		07/21/2017 11:54	1	2017.07.21A_005 .d	GeminiC18 3x100 3(mm)
CCV 320-175391/3		07/21/2017 12:00	1		GeminiC18 3x100 3(mm)
ZZZZZ		07/21/2017 12:07	1		GeminiC18 3x100 3(mm)
ZZZZZ		07/21/2017 12:14	1		GeminiC18 3x100 3(mm)
ZZZZZ		07/21/2017 12:21	1		GeminiC18 3x100 3(mm)
CCV 320-175391/7		07/21/2017 12:28	1		GeminiC18 3x100 3(mm)

Lab Name:	TestAmerica Sacramento	Job No.: 320-29732-1
SDG No.:		
Instrument	z ID: <u>A8_N</u>	Start Date: 07/21/2017 20:38

Analysis Batch Number: 175462 End Date: 07/21/2017 23:44

LAB SAMPLE ID	CLIENT SAMPLE ID	DATE ANALYZED	DILUTION FACTOR	LAB FILE ID	COLUMN ID
CCV 320-175462/1		07/21/2017 20:38	1	2017.07.21C_015	GeminiC18 3x100 3(mm)
MB 320-174599/1-A		07/21/2017 20:45	1	2017.07.21C_015 .d 2017.07.21C_016 .d	GeminiC18 3x100 3 (mm)
LCS 320-174599/2-A		07/21/2017 20:52	1	2017.07.21c_017 .d 2017.07.21c_018	GeminiC18 3x100 3 (mm)
LCSD 320-174599/3-A		07/21/2017 20:59	1	2017.07.21C_018	GeminiC18 3x100 3(mm)
320-29732-4		07/21/2017 21:06	1		GeminiC18 3x100 3(mm)
CCV 320-175462/9		07/21/2017 21:33	1		GeminiC18 3x100 3(mm)
ZZZZZ		07/21/2017 21:47	1		GeminiC18 3x100 3(mm)
ZZZZZ		07/21/2017 21:54	1		GeminiC18 3x100 3(mm)
ZZZZZ		07/21/2017 22:01	1		GeminiC18 3x100 3(mm)
ZZZZZ		07/21/2017 22:08	1		GeminiC18 3x100 3(mm)
ZZZZZ		07/21/2017 22:15	1		GeminiC18 3x100 3(mm)
ZZZZZ		07/21/2017 22:42	1		GeminiC18 3x100 3(mm)
CCV 320-175462/20		07/21/2017 22:49	1		GeminiC18 3x100 3(mm)
ZZZZZ		07/21/2017 22:56	1		GeminiC18 3x100 3(mm)
CCV 320-175462/22		07/21/2017 23:03	1		GeminiC18 3x100 3(mm)
ZZZZZ		07/21/2017 23:10	1		GeminiC18 3x100 3(mm)
ZZZZZ		07/21/2017 23:17	1		GeminiC18 3x100 3(mm)
ZZZZZ		07/21/2017 23:24	1		GeminiC18 3x100 3(mm)
ZZZZZ		07/21/2017 23:31	1		GeminiC18 3x100 3(mm)
ZZZZZ		07/21/2017 23:37	1		GeminiC18 3x100 3(mm)
CCV 320-175462/28		07/21/2017 23:44	1		GeminiC18 3x100 3 (mm)

Lab Name:	TestAmerica Sacramento	Job No.: 320-29732-1
SDG No.:		
Instrument	: ID: A8_N	Start Date: 07/23/2017 13:10

Analysis Batch Number: 175476 End Date: 07/23/2017 14:12

TAD CAMPIE ID	CLIENT CIMPLE ID	DAME ANALYGED	DILLIMION	TAD BILD ID	COLUMN TO
LAB SAMPLE ID	CLIENT SAMPLE ID	DATE ANALYZED	DILUTION	LAB FILE ID	COLUMN ID
			FACTOR		
IC 320-175476/3		07/23/2017 13:10	1	2017.07.23ICAL	GeminiC18 3x100 3(mm)
				003.d	, ,
IC 320-175476/4		07/23/2017 13:17	1	2017.07.23ICAL_	GeminiC18 3x100 3(mm)
				004.d	
IC 320-175476/5		07/23/2017 13:23	1	2017.07.23ICAL_	GeminiC18 3x100 3(mm)
				005.d	
IC 320-175476/6		07/23/2017 13:30	1	2017.07.23ICAL_	GeminiC18 3x100 3(mm)
				006.d	
IC 320-175476/7		07/23/2017 13:37	1	2017.07.23ICAL_	GeminiC18 3x100 3(mm)
TO 200 175 476 /0		07/02/0017 12 44	1	007.d	0 1 1010 0 100 0 ()
IC 320-175476/8		07/23/2017 13:44	1	2017.07.23ICAL_ 008.d	GeminiC18 3x100 3(mm)
IC 320-175476/9		07/23/2017 13:51	1	2017.07.23ICAL	Camini G10 3100 3 ()
10 320-1/34/6/9		07/23/2017 13:51	1	009.d	GeminiC18 3x100 3(mm)
IC 320-175476/10		07/23/2017 13:58	1	2017.07.23ICAL	GeminiC18 3x100 3(mm)
10 320 1/34/0/10		07/25/2017 15:50	_	010.d	GCMITTICIO SATOO S (Nun)
ICB 320-175476/11		07/23/2017 14:05	1	010.0	GeminiC18 3x100 3(mm)
		, , ,	1	2017 07 227077	, ,
ICV 320-175476/12		07/23/2017 14:12	1	2017.07.23ICAL_	GeminiC18 3x100 3(mm)
	1		1	012.d	

Lab Name: TestAmerica Sacramento	Job No.: 320-29732-1
SDG No.:	
Instrument ID: A8_N	Start Date: 07/23/2017 14:32
Analysis Batch Number: 175528	End Date: 07/23/2017 17:18

LAB SAMPLE ID	CLIENT SAMPLE ID	DATE ANALYZED	DILUTION	LAB FILE ID	COLUMN ID
			FACTOR		
CCV 320-175528/1		07/23/2017 14:32	1	2017.07.23A_001	GeminiC18 3x100 3(mm)
MB 320-175097/1-A		07/23/2017 14:39	1	.d 2017.07.23A_002	GeminiC18 3x100 3(mm)
LCS 320-175097/2-A		07/23/2017 14:46	1	2017.07.23A_003	GeminiC18 3x100 3(mm)
LCSD 320-175097/3-A		07/23/2017 14:53	1	2017.07.23A_004	GeminiC18 3x100 3(mm)
CCV 320-175528/12		07/23/2017 15:48	1	2017.07.23A_012 .d	GeminiC18 3x100 3(mm)
320-29732-1		07/23/2017 16:16	1	2017.07.23A_016 .d	GeminiC18 3x100 3(mm)
ZZZZZ		07/23/2017 16:23	1		GeminiC18 3x100 3(mm)
320-29732-3		07/23/2017 16:30	1	2017.07.23A_018 .d	GeminiC18 3x100 3(mm)
CCV 320-175528/21		07/23/2017 16:50	1	2017.07.23A_021 .d	GeminiC18 3x100 3(mm)
CCV 320-175528/25		07/23/2017 17:18	1		GeminiC18 3x100 3(mm)

Lab Name: TestAmerica Sacramento	Job No.: <u>320-29732-1</u>			
SDG No.:				
Instrument ID: A8_N	Start Date: 07/24/2017 11:42			
Analysis Batch Number: 175631	End Date: 07/24/2017 12:23			

LAB SAMPLE ID	CLIENT SAMPLE ID	DATE ANALYZED	DILUTION FACTOR	LAB FILE ID	COLUMN ID
CCVL 320-175631/2		07/24/2017 11:42	1	2017.07.24A_004 .d	GeminiC18 3x100 3(mm)
CCV 320-175631/3		07/24/2017 11:49	1		GeminiC18 3x100 3(mm)
ZZZZZ		07/24/2017 11:56	1		GeminiC18 3x100 3(mm)
ZZZZZ		07/24/2017 12:02	5		GeminiC18 3x100 3(mm)
ZZZZZ		07/24/2017 12:09	1		GeminiC18 3x100 3(mm)
ZZZZZ		07/24/2017 12:16	1		GeminiC18 3x100 3(mm)
CCV 320-175631/8		07/24/2017 12:23	1		GeminiC18 3x100 3(mm)

Lab Name: TestAmerica Sacramento	Job No.: 320-29732-1
SDG No.:	
Instrument ID: A8_N	Start Date: 07/24/2017 20:00
Analysis Batch Number: 175757	End Date: 07/24/2017 20:21

LAB SAMPLE ID	CLIENT SAMPLE ID	DATE ANALYZED	DILUTION FACTOR	LAB FILE ID	COLUMN ID
CCV 320-175757/1		07/24/2017 20:00	1	2017.07.24AA_02 8.d	GeminiC18 3x100 3(mm)
320-29732-1 DL		07/24/2017 20:07	10	2017.07.24AA_02 9.d	GeminiC18 3x100 3(mm)
320-29732-2		07/24/2017 20:14	1	2017.07.24AA_03 0.d	GeminiC18 3x100 3(mm)
CCV 320-175757/4		07/24/2017 20:21	1	2017.07.24AA_03 1.d	GeminiC18 3x100 3(mm)

Lab Name: TestAmerica Sacramento	Job No.: 320-29732-1		
SDG No.:			
Instrument ID: A8_N	Start Date: 07/25/2017 09:27		
Analysis Batch Number: 175762	End Date: 07/25/2017 10:02		

LAB SAMPLE ID	CLIENT SAMPLE ID	DATE ANALYZED	DILUTION	LAB FILE ID	COLUMN ID
			FACTOR		
CCVL 320-175762/3		07/25/2017 09:27	1	2017.07.25A_003	GeminiC18 3x100 3(mm)
CCV 320-175762/4		07/25/2017 09:34	1		GeminiC18 3x100 3(mm)
ZZZZZ		07/25/2017 09:41	1		GeminiC18 3x100 3(mm)
ZZZZZ		07/25/2017 09:48	1		GeminiC18 3x100 3(mm)
ZZZZZ		07/25/2017 09:55	1		GeminiC18 3x100 3(mm)
CCV 320-175762/8		07/25/2017 10:02	1		GeminiC18 3x100 3(mm)

Lab Name: TestAmerica Sacramento	Job No.: <u>320-29732-1</u>
SDG No.:	
Instrument ID: A8_N	Start Date: 07/25/2017 14:10
Analysis Batch Number: 175951	End Date: 07/25/2017 17:10

LAB SAMPLE ID	CLIENT SAMPLE ID	DATE ANALYZED	DILUTION	LAB FILE ID	COLUMN ID
			FACTOR		
CCV 320-175951/1		07/25/2017 14:10	1	2017.07.25B 001	GeminiC18 3x100 3(mm)
				.d	
MB 320-175074/1-A		07/25/2017 14:17	1	2017.07.25B_002	GeminiC18 3x100 3(mm)
				.d	
LCS 320-175074/2-A		07/25/2017 14:24	1	2017.07.25B_003	GeminiC18 3x100 3(mm)
T 00D 000 175074/2 3		07/05/0017 14 21	1	.d	2 1 1210 2 100 27
LCSD 320-175074/3-A		07/25/2017 14:31	1	2017.07.25B_004 .d	GeminiC18 3x100 3(mm)
320-29732-1 RE		07/25/2017 15:05	1	2017.07.25B 009	GeminiC18 3x100 3(mm)
320 23/32 1 10		0772372017 13:03		.d	General Saloo S (nun)
320-29732-2 RE		07/25/2017 15:12	1	2017.07.25B 010	GeminiC18 3x100 3(mm)
				.d	
320-29732-3 RE		07/25/2017 15:19	1	2017.07.25B_011	GeminiC18 3x100 3(mm)
				.d	
CCV 320-175951/12		07/25/2017 15:26	1	2017.07.25B_012	GeminiC18 3x100 3(mm)
		05/05/0015 16 10		.d	- 1 1-10 0 100 0 ()
CCV 320-175951/23		07/25/2017 16:42	1		GeminiC18 3x100 3(mm)
CCV 320-175951/27		07/25/2017 17:10	1		GeminiC18 3x100 3(mm)

Lab Name: TestAmerica Sacramento	Job No.: <u>320-29732-1</u>
SDG No.:	
Instrument ID: A8_N	Start Date: 07/27/2017 12:19
Analysis Batch Number: 176352	End Date: 07/27/2017 13:28

LAB SAMPLE ID	CLIENT SAMPLE ID	DATE ANALYZED	DILUTION FACTOR	LAB FILE ID	COLUMN ID
CCVL 320-176352/3		07/27/2017 12:19	1	2017.07.27A_004	GeminiC18 3x100 3 (mm)
CCV 320-176352/4		07/27/2017 12:26	1		GeminiC18 3x100 3(mm)
ZZZZZ		07/27/2017 12:33	1		GeminiC18 3x100 3(mm)
ZZZZZ		07/27/2017 12:40	1		GeminiC18 3x100 3(mm)
ZZZZZ		07/27/2017 12:47	10		GeminiC18 3x100 3(mm)
ZZZZZ		07/27/2017 12:54	10		GeminiC18 3x100 3(mm)
ZZZZZ		07/27/2017 13:01	10		GeminiC18 3x100 3(mm)
ZZZZZ		07/27/2017 13:08	10		GeminiC18 3x100 3(mm)
ZZZZZ		07/27/2017 13:14	20		GeminiC18 3x100 3(mm)
ZZZZZ		07/27/2017 13:21	10		GeminiC18 3x100 3(mm)
CCV 320-176352/13		07/27/2017 13:28	1		GeminiC18 3x100 3(mm)

Lab Name: <u>TestAmerica Sacrame</u>	nto Job No.: 320-29732-1
SDG No.:	
Instrument ID: A8_N	Start Date: 07/27/2017 20:48
Analysis Batch Number: 176487	End Date: 07/27/2017 22:25

LAB SAMPLE ID	CLIENT SAMPLE ID	DATE ANALYZED	DILUTION FACTOR	LAB FILE ID	COLUMN ID
CCV 320-176487/1		07/27/2017 20:48	1	2017.07.27C_001 .d	GeminiC18 3x100 3(mm)
MB 320-175742/1-A		07/27/2017 20:55	1	2017.07.27C_002 .d	GeminiC18 3x100 3(mm)
LCS 320-175742/2-A		07/27/2017 21:02	1	2017.07.27C_003 .d	GeminiC18 3x100 3(mm)
LCSD 320-175742/3-A		07/27/2017 21:09	1	2017.07.27C_004 .d	GeminiC18 3x100 3(mm)
CCV 320-176487/12		07/27/2017 22:04	1	2017.07.27C_012 .d	GeminiC18 3x100 3(mm)
320-29732-4 RE		07/27/2017 22:18	1	2017.07.27C_014 .d	GeminiC18 3x100 3(mm)
CCV 320-176487/15		07/27/2017 22:25	1	2017.07.27C_015 .d	GeminiC18 3x100 3(mm)

Lab Name: TestAmerica Sacramento Job No.: 320-29732-1

Lab Sample ID | Client Sample ID | Method Chain | Basis | GrossWeight

SDG No.:

Batch Number: 174599 Batch Start Date: 07/18/17 07:22 Batch Analyst: Branscum, Cassie

Batch Method: 3535 Batch End Date: 07/20/17 21:40

MB 320-174599/1		3535, 537				250 mL	0.50 mL	500 uL	
		(Modified)							
LCS		3535 , 537				250 mL	0.50 mL	500 uL	500 uL
320-174599/2		(Modified)							
LCSD		3535 , 537				250 mL	0.50 mL	500 uL	500 uL
320-174599/3		(Modified)							
320-29732-A-4	TP-PFC-019-TPE-D	3535, 537	Т	285.36 g	26.98 q	258.4 mL	0.50 mL	500 uL	
		(Modified)							
Lab Sample ID	Client Sample ID	Method Chain	Basis	AnalysisComment					
MB 320-174599/1		3535, 537		Time off the					
112 020 1,1033,1		(Modified)		N-evap: 7:48 pm					
LCS		3535, 537		Time off the					
320-174599/2		(Modified)		N-evap: 7:30 pm					
LCSD		3535, 537		Time off the					
320-174599/3		(Modified)		N-evap: 7:15 pm					
320-29732-A-4	TP-PFC-019-TPE-D	3535, 537	т	Time off the					
		(Modified)	1 -	N-evap: 7:00 pm		I		1	I

TareWeight

InitialAmount

FinalAmount

The pound sign (#) in the amount added field denotes that the reagent was used undiluted. All calculations are performed using the stated concentration for this reagent.

LCPFCSP 00100

LCMPFCSU 00081

Lab Name: TestAmerica Sacramento Job No.: 320-29732-1

SDG No.:

Batch Number: 174599 Batch Start Date: 07/18/17 07:22 Batch Analyst: Branscum, Cassie

Batch Method: 3535 Batch End Date: 07/20/17 21:40

Batch Notes						
Balance ID	QA-070					
H2O ID	7/17/17					
Hexane ID	958899					
Manifold ID	12,13					
Methanol ID	973171					
Sodium Hydroxide ID	966118					
Pipette ID	N32728F					
Analyst ID - Reagent Drop	ССВ					
Analyst ID - SU Reagent Drop	ССВ					
Analyst ID - SU Reagent Drop Witness	NSH					
Solvent Lot #	976948					
Solvent Name	0.3% NH4OH/MeOH					
SOP Number	WS-LC-0025					
SPE Cartridge Type	WAX 500mg					
Solid Phase Extraction Disk ID	003036333A					

Basis	Basis Description
Т	Total/NA

Lab Name: TestAmerica Sacramento Job No.: 320-29732-1

SDG No.:

Batch Number: 175074 Batch Start Date: 07/20/17 09:14 Batch Analyst: Santos, Jonathan

Batch Method: 3535 Batch End Date: 07/24/17 22:05

Lab Sample ID	Client Sample ID	Method Chain	Basis	GrossWeight	TareWeight	InitialAmount	FinalAmount	LCMPFCSU 00081	LCPFCSP 00100
MB 320-175074/1		3535, 537 (Modified)				250.00 mL	0.50 mL	500 uL	
LCS 320-175074/2		3535, 537 (Modified)				250.00 mL	0.50 mL	500 uL	500 uL
LCSD 320-175074/3		3535, 537 (Modified)				250.00 mL	0.50 mL	500 uL	500 uL
320-17307473 320-29732-A-1	TP-PFC-019-TPI	3535, 537	Т	284.68 g	26.67 g	258 mL	0.50 mL	500 uL	
320-29732-A-2	TP-PFC-019-MID-C	(Modified) 3535, 537 (Modified)	T	279.04 g	27.01 g	252 mL	0.50 mL	500 uL	
320-29732-A-3	TP-PFC-019-TPE	3535, 537 (Modified)	T	281.97 g	27.36 g	254.6 mL	0.50 mL	500 uL	

Batch Notes						
QA-070						
7/17/17						
958901						
2, 8						
983105						
988541						
N32728F						
НЈА						
НЈА						
JNS						
987338						
0.3% NH4OH/MeOH						
WS-LC-0025						
WAX 500mg						
003036333A						

Basis	Basis Description
Т	Total/NA

Lab Name: TestAmerica Sacramento Job No.: 320-29732-1

SDG No.:

Batch Number: 175097 Batch Start Date: 07/20/17 10:13 Batch Analyst: Branscum, Cassie

Batch Method: 3535 Batch End Date: 07/22/17 12:30

Lab Sample ID	Client Sample ID	Method Chain	Basis	GrossWeight	TareWeight	InitialAmount	FinalAmount	LCMPFC2SU 00025	LCMPFCSU 00081
MB 320-175097/1		3535, 537				250 mL	0.50 mL	500 uL	500 uL
		(Modified)							
LCS		3535 , 537				250 mL	0.50 mL	500 uL	500 uL
320-175097/2		(Modified)							
LCSD		3535, 537				250 mL	0.50 mL	500 uL	500 uL
320-175097/3		(Modified)							
320-29732-C-1	TP-PFC-019-TPI	3535, 537	Т	283.61 g	27.32 g	256.3 mL	0.50 mL	500 uL	500 uL
		(Modified)			_				
320-29732-C-2	TP-PFC-019-MID-C	3535, 537	Т	278.12 g	27.30 g	250.8 mL	0.50 mL	500 uL	500 uL
	ARBON	(Modified)			_				
320-29732-C-3	TP-PFC-019-TPE	3535, 537	Т	286.52 g	26.98 q	259.5 mL	0.50 mL	500 uL	500 uL
		(Modified)			_				

Lab Sample ID	Client Sample ID	Method Chain	Basis	LCPFC2SP 00032	LCPFCSP 00100	AnalysisComment		
MB 320-175097/1		3535, 537						
		(Modified)						
LCS		3535 , 537		500 uL	500 uL			
320-175097/2		(Modified)						
LCSD		3535 , 537		500 uL	500 uL			
320-175097/3		(Modified)						
320-29732-C-1	TP-PFC-019-TPI	3535, 537	Т					
		(Modified)						
320-29732-C-2	TP-PFC-019-MID-C	3535, 537	Т			Milky white		
	ARBON	(Modified)				samples after		
						FV		
320-29732-C-3	TP-PFC-019-TPE	3535 , 537	Т			Milky white		
		(Modified)				samples after		
						FV		

Lab Name: TestAmerica Sacramento Job No.: 320-29732-1

SDG No.:

Batch Number: 175097 Batch Start Date: 07/20/17 10:13 Batch Analyst: Branscum, Cassie

Batch Method: 3535 Batch End Date: 07/22/17 12:30

Batch Notes				
Balance ID	QA-070			
H2O ID	7/17/17			
Hexane ID	981623			
Manifold ID	13,14			
Methanol ID	983105			
Sodium Hydroxide ID	988541			
Pipette ID	N32728F			
Analyst ID - Reagent Drop	ССВ			
Analyst ID - SU Reagent Drop	ССВ			
Analyst ID - SU Reagent Drop Witness	NSH			
Solvent Lot #	987338			
Solvent Name	0.3% NH4OH/MeOH			
SOP Number	WS-LC-0025			
SPE Cartridge Type	WAX 500mg			
Solid Phase Extraction Disk ID	003036333A			

Basis	Basis Description
Т	Total/NA

Lab Name: TestAmerica Sacramento Job No.: 320-29732-1

SDG No.:

Batch Number: 175742 Batch Start Date: 07/25/17 09:11 Batch Analyst: Santos, Jonathan

Batch Method: 3535 Batch End Date: 07/27/17 14:07

Lab Sample ID	Client Sample ID	Method Chain	Basis	GrossWeight	TareWeight	InitialAmount	FinalAmount	LCMPFC ALL SU	LCPFCSP 00110
	-							00004	
MB 320-175742/1		3535, 537				250.00 mL	0.50 mL	500 uL	
		(Modified)							
LCS		3535, 537				250.00 mL	0.50 mL	500 uL	500 uL
320-175742/2		(Modified)							
LCSD		3535 , 537				250.00 mL	0.50 mL	500 uL	500 uL
320-175742/3		(Modified)							
320-29732-C-4	TP-PFC-019-TPE-D	3535, 537	Т	272.84 g	27.30 g	245.5 mL	0.50 mL	500 uL	
		(Modified)							

Batch Notes				
Balance ID	QA-070			
H2O ID	7/21/17			
Hexane ID	981625			
Manifold ID	2, 8			
Methanol ID	988835			
Sodium Hydroxide ID	988541			
Pipette ID	MD05306			
Analyst ID - Reagent Drop	ССВ			
Analyst ID - SU Reagent Drop	CCB			
Analyst ID - SU Reagent Drop Witness	JNS			
Solvent Lot #	987338			
Solvent Name	0.3% NH4OH/MeOH			
SOP Number	WS-LC-0025			
SPE Cartridge Type	WAX 500mg			
Solid Phase Extraction Disk ID	003237040A			

Basis	Basis Description
Т	Total/NA



West Sacramento

HPLC/LCMS Data Review Checklist

29816; 160-23181	Mante Lint ID/-	. <i>uca</i>	41. 110	300 <i>UO</i> 8	272
38c7/x/17	WORK LIST ID(S): <u> </u>	5746/A):	175747	<u> </u>
Job Number(s): <u>29732; 29409; 29517; 29713;</u> **Section Batch: <u>174599; 175697</u> ; 173307	Analysis Batch	n(es): <u>17</u>	4105 : 17	5462; 175	1463 ; 1°
Delivery Rank	Due Date:				
A. Calibration/Instrument Run QC			1 st Level	2 nd Level	N/A
1. ICAL locked in Chrom and TALS? ICAL Batch# 1752	52 175253;	175477	/	1	
2. ICAL, CCV Frequency & Criteria met.			V		
 RF_{average} criteria appropriate for the method. 			/		
 Linear Regression criteria appropriate if required (
 Quadratic fit criteria appropriate if required (r² ≥ 0.9 					V
 For Linear Regression and Quadratic fit – Does the ½ the reporting limit as described in CA-Q-S-005? 	e y-intercept su	ipport			
All curve points show calculated concentrations.			<u> </u>		
Peaks correctly ID'd by data system.	<u>.</u>	-+	1/		
Tune check frequency & criteria met and Tune check re	port attached		<u> </u>		\longrightarrow
B QA/QC	port attached.		V		
Are all QC samples properly linked in TALS?		- 87			
Method blank, LCS/LCSD and MS/SD frequencies met.		+		_/_	
3. LCS/LCSD and MB data are within control limits. If not,	NCM is preser	nt -	V		
4. Are MS/MSD recoveries and RPD within control limits?	14OW 13 Preser	11.			
Holding Times were met for prep and analytical.	-		~		
6. IS/Surrogate recoveries meet criteria or properly noted.					
C Sample Analysis					
1. Was correct analysis performed and were project instruc	ctions followed	2			
2. If required, are compounds within RT windows?	DECORPORATE OF THE PROPERTY OF	·			
3. If required, are positive hits confirmed and >40% RPD fl	agged?				$\overline{}$
Manual Integrations reviewed and appropriate.	-99		/		*
5. All analytes correctly reported. (Primary, secondary, acc	eptable status))	1		
Correct reporting limits used. (based on client request, dilutions)	prep factors, ar	nd	V	V	
D Documentation					
1. Are all non-conformances documented/attached? NCM	#		V		
2. Do results make sense (e.g. dilutions, etc.)?	<u> </u>		V		
Have all flags been reviewed for appropriateness?			1	/	
4. For level 3 and 4 reports, have forms and raw data bee	n reviewed?				$\neg \neg$
5. Was QC Checker run for this job?			/	/	
*Upon completion of this checklist, the reviewer must scan a	and attach the o	checklist t	o the TALS	iob.	
1 st Level (Analyst):	Date: 7	25/17			
2 nd Level Reviewer:	Date:	7/26/20	017		
NCMs: 95271; 95251; 95280; 95249	, 95252;	95289	5,- 952	86; 952	77

15 9493 94953

TestAmerica Laboratories Worklist QC Batch Report

Worklist Name:

21JUL2017F_PFC

Worklist Number:

45761

Instrument Name: A8_N

Chrom Method:

A8 N

Data Directory:

\\ChromNa\Sacramento\ChromData\A8_N\20170722-45761.b

QC Batching:

Disabled

Limit Group Batching: Enabled

QC Batch: 1	LC PFC_DOD ICAL Raw Batch: 175462	LC PFC ICAL Raw Batch: 175463	LC PFAS ICAL Raw Batch 175464
# 1 CCV L4 # 2 MB 320-174599/1-A	#1 CCV L4 #2 MB 320-174599/1-A	# 2 MB 320-174599/1-A	12 low 95285
3 LCS 320-174599/2-A 4 LCSD 320-174599/3-A	#3 LCS 320-174599/2-A PF #4 LCSD 320-174599/3-APF	# 3 LCS 320-174599/2-A # 4 LCSD 320-174599/3-A	95286
5 320-29732-A-4-A 6 160-23181-A-1-A	#5 320-29732-A-4-A (BA) (SL71	# 6 160-23181-A-1-A	# 6 160-23181-A-1-A
7 160-23181-A-2-B 8 320-29816-A-1-B		# 7 160-23181-A-2-B # 8 320-29816-A-1-B	# 7 160-23181-A-2-B # 8 320-29816-A-1-B
9 CCV L5 10 320-29816-A-2-B 11 320-29409-B-1-B	#9 CCV L5	# 9 CCV L5 #10 320-29816-A-2-B	#10 320-29816-A-2-B
12 320-29409-B-2-B 13 320-29409-B-4-D	#11 320-29409-B-1-B #12 320-29409-B-2-B #13 320-29409-B-4-D		
14 320-29409-B-4-E MS 15 320-29409-B-4-F MSD	#14 320-29409-B-4-E MS #15 320-29409-B-4-F MSD		
16 320-29713-A-1-B 17 320-29713-A-2-B	MS/MSDY. R. LCS	#16 320-29713-A-1-B #17 320-29713-A-2-B	#16 320-29713-A-1-B #17 320-29713-A-2-B
18 320-29713-A-3-B 19 320-29409-B-3-A	#19 320-29409-B-3-A 7/28/17	#18 320-29713-A-3-B 5 _X	#17 320-29713-A-2-B #18 320-29713-A-3-B
20 CCV L4 21 320-29409-B-5-A	#20 CCV L4 #21 320-29409-B-5-A	\rightarrow	
2 CCV L5 3 MB 320-173307/1-A	#22 CCV L5	#22 CCV L5	[max /max] 000 co
4 LCS 320-173307/2-A 5 320-29517-A-21-A	#24 LCS 320-173307/2-A #25 320-29517-A-21-A5X	can confirm DA	logation 95280 Several
26 320-29517-A-21-B MS 27 320-29517-A-21-C MSD	#25 MB 320-173307/1-A #24 LCS 320-173307/2-A #25 320-29517-A-21-B MS; #26 320-29517-A-21-C MSD #28 CCV L4	is msp high tangets	
28 CCV L4	#28 CCV L4	95251	

29409 original 174105 NCM Raised FOBARL 95249 RX worse than original; all @ 15+ E flag 95252

COVL 175391 175392

Report Date: 25-Jul-2017 09:50:16

Chrom Revision: 2.2 20-Jun-2017 07:42:36

45829

Page: 1

TestAmerica Laboratories Worklist QC Batch Report

Worklist Name:

24JUL2017D_PFC

Worklist Number:

Instrument Name: A8_N

Chrom Method: A8_N

Data Directory:

\\ChromNa\Sacramento\ChromData\A8_N\20170725-45829.b

QC Batching:

Disabled

Limit Group Batching: Enabled

QC Batch: 1	LC PFC_DOD ICAL Raw Batch: 175752	LC PFC ICAL Raw Batch: 175753
# 1 CCV L5 # 2 320-29517-A-21-A # 3 320-29517-A-21-B MS # 4 320-29517-A-21-C MSD # 5 CCV L4	# 1 CCV L5 # 2 320-29517-A-21-A # 3 320-29517-A-21-B MS # 4 320-29517-A-21-C MSD # 5 CCV L4	#1 CCV L5 RL,DL 95277 #5 CCV L4

CCVL 175631

Report Date: 25-Jul-2017 10:12:09

Chrom Revision: 2.2 20-Jun-2017 07:42:36

Page: 1

TestAmerica Laboratories Worklist QC Batch Report

Worklist Name:

24JUL2017C_PFC

Worklist Number: 45827

Instrument Name: A8_N

Chrom Method:

43627 A8_N

Data Directory:

\\ChromNa\Sacramento\ChromData\A8_N\20170725-45827.b

QC Batching:

Disabled

Limit Group Batching: Enabled

QC Batch: 1	LC PFC_DOD ICAL Raw Batch: 175746	LC PFC ICAL Raw Batch: 175747
# 1 CCV L4 # 2 320-29713-A-3-B # 3 320-29409-B-5-A # 4 CCV L5	# 1 CCV L4 # 3 320-29409-B-5-A # 4 CCV L5	#1 CCV L4 #2 320-29713-A-3-B #4 CCV L5

CEVL 175632

62 RX~F05A

Batch Number: 320-174599

Method Code: 320-3535_PFC-320

Aqueous Extraction Analysis Sheet

(To Accompany Samples to Instruments)

Analyst: Branscum, Cassie

ps 7/21/17

Batch Open: 7/18/2017 7:22:00AM

Batch End: 7/20/2017 9:40:00PM

Solid-Phase Extraction (SPE)

	Input Sample Lab ID (Analytical Method)	SDG (Job #)	GrossWt TareWt	InitAmnt FinAmnt	Rcvd	PHs Adj1	Adj2	Due Date	Analytical TAT	Dlv Rank	Comments	Output Sample Lab ID
1	MB~320-174599/1 N/A	N/A		250 mL				N/A	N/A	N/A	Time off the N-evap: 7:48 pm	Ministeratīrās Drautivārāk interniju iz arkitik
	1.00.000.4745500			0.50 mL							pm FE Co	1/05/17
2	LCS~320-174599/2 N/A	N/A		250 mL		'		N/A	N/A	N/A	Time off the N-evap: 7:30 RT	
				0.50 mL							pm KI	
3 Page	LCSD~320-174599/3 N/A	N/A		250 mL			-	N/A	N/A	N/A	Time off the N-evap: 7:15	
च <u>न</u>				0.50 mኒ							N-evap: 7:15 PT	, , , , , , , , , , , , , , , , , , ,
4 5	320-29732-A-4 (PFC_IDA_DOD5)	N/A (320-29732-1)	285.36 g	258.4 mL	-			7/23/17	16_Days	4	Time off the N-evap: 7:00	
#			26.98 g	0.50 mL							pm	
5	160-23181-A-1 (PFC_IDA)	N/A (160-23181-1)	286.70 g	258.6 mL				7/25/17	12_Days	4	Time off the N-evap: 8:00	
											pm (Cloudy yellow	
			28.09 g	0.50 mL		ļ					sample)	
6	160-23181-A-2 (PFC_IDA)	N/A (160-23181-1)	279.64 g	252.1 mL				7/25/17	12_Days	4	Time off the N-evap: 6:00	
L			27.57 g	0.50 mL							pm	
7	320-29816-A-1 (PFC_IDA)	N/A (320-29816-1)	279.11 g	252.2 mL				7/28/17	12_Days	4	Time off the N-evap: 8:26	
L			26.94 g	0.50 mL							pm	
8	320-29816-A-2 (PFC_IDA)	N/A (320-29816-1)	285.52 g	257.2 mL				7/28/17	12_Days	4	Time off the N-evap: 6:48	
			28.32 g	0.50 mL		İ					pm	

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(To Accompany Samples to Instruments)

Batch Number: 320-174599

Analyst: Branscum, Cassie

Batch Open: 7/18/2017 7:22:00AM

Method Code: 320-3535_PFC-320

Batch End: 7/20/2017 9:40:00PM

Г	320-29409-B-1	N/A								772072017 3.40.00F[V]
9	(PFC_IDA_DOD5)	(320-29409-1)	285.61 g	257.7 mL		7/7/17	8_Days	4	Time off the N-evap: 6:40 pm (Cloudy white)	
Ļ	320-29409-B-2		27.93 g	0.50 mL						
10	320-29409-B-2 (PFC_IDA_DOD5)	N/A (320-29409-1)	281.00 g	253 mL		7/7/17	8_Days	4	Time off the N-evap: 6:40	
	320-29409-B-4		28.03 g	0.50 mL					pm (Cloudy white)	
11	(PFC_IDA_DOD5)	N/A (320-29409-1)	293.27 g	266 mL		7/7/17	8_Days	4	Time off the N-evap: 7:00	
	320-29409-B-4~MS	N/A	27.25 g	0.50 mL					pm (Cloudy white)	
12 Pag	(PFC_IDA_DOD5)	(320-29409-1)	280.54 g	253.3 mL		7/7/17	8_Days	4	Time off the N-evap: 5:36	
Page 1046	320-29409-B-4~MSD	N/A	27.28 g	0.50 mL					pm 1st one to come off	
13 d	(PFC_IDA_DOD5)	(320-29409-1)	272.30 g	245.4 mL		7/7/17	8_Days	4	Time off the N-evap: 7:30	Mania in
1	320-29713-A-1	Saint Gobain-Pipe	26.89 g	0.50 mL					pm (Cloudy white)	
14	(PFC_IDA)	Clesojoso Aetivities	264.12 g	236.4 mL		7/25/17	12_Days	2	Time off the N-evap: 8:26	
L			27.74 g	0.50 mL					pm	
15	320-29713-A-2 (PFC_IDA)	Saint Gobain-Pipe CleaningoAetivities	280.48 g	252.6 mL		7/25/17	12_Days	2	Time off the N-evap: 8:00	
			27.90 g	0.50 mL	ľ				pm	
16	320-29713-A-3 (PFC_IDA)	Saint Gobain-Pipe ClassijosoAetivities	274.81 g	247.3 mL		7/25/17	12_Days	2	Time off the N-evap: 7:48 5X	Ministratininininininininininininininininininin
			27.50 g	0.50 mL					pm	The state of the s
17	320-29409-B-3 (PFC_IDA_DOD5)	N/A	290.75 g	263.2 mL		7/7/17	8_Days	4	Time off the N-evap: 6:48	A STATE OF THE PROPERTY OF THE
			27.55 g	0.50 mL			1		pm (Cloudy white)	

Printed: 7/20/2017

Page 2 of 7

(To Accompany Samples to Instruments)

Batch Number: 320-174599

Method Code: 320-3535_PFC-320

A

A Analyst: Branscum, Cassie

Batch Open: 7/18/2017 7:22:00AM

Batch End: 7/2017 21140

Solid-Phase Extraction (SPE)

i	Input Sample Lab ID (Analytical Method)	SDG (Job #)		InitAmnt FinAmnt	Rcvd	PHs Adj1	Adj2	Due Date	Analytical TAT	Dlv Rank	Comments	Output Sample Lab ID
1	MB~320-174599/1 N/A	N/A		250 mL	-			N/A	N/A	N/A	port 1	
i	LCS~320-174599/2	FI/A		0.50 mL							7:48	IMPI M D 3 2 6 - 1 / 4 5 9 9 / 1 - A(IIII)
2	N/A	N/A		250 mL				N/A	N/A	N/A	port 2	
	LCSD~320-174599/3			0.50 mL							7:30	10 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
3	N/A	N/A		250 mL	·			N/A	N/A	N/A	POP 3	
ъ Д	320-29732-A-4			0.50 mL		_					7:15	INNIL C S D 3 2 0 - 1 7 4 5 9 9 / 3 - AIMI
age 10	320-29/32-A-4 (PFC_IDA_DOD5)	N/A (320-29732-1)	285.36 g	258.4 mL				7/23/17	16_Days	4	pora 4	
7			26.98 g	0.50 mL							7:00 pm	3 2 8 - 2 9 7 3 2 - A - 4 - AIW
5 ⁹	160-23181-A-1 (PFC_IDA)	N/A (160-23181-1)	286.70 g	258.6 mL				7/25/17	12_Days	4	P0725	
d H	·	<u></u>	28.09 g	0.50 mL							8:00 00	udy yellow
6	160-23181-A-2 (PFC_IDA)	N/A (160-23181-1)	279.64 g	252.1 mL				7/25/17	12_Days	4	port 6	A LO DIO MININI MILITA NA TANDRE NA PROPERTINA NA TANDRE NA PARAMENTANA NA PARAMENTANA NA TANDRE NA PARAMENTANA NA P
	200 000		27.57 g	.0.50 mL							(Lepm)	1 6 8 - 2 3 1 8 1 - A - 2 - B1III
7	320-29816-A-1 (PFC_IDA)	N/A (320-29816-1)	279.11 g	252.2 mL				7/28/17	12_Days	4	DON 7	
	320-29816-A-2		26.94 g	0.50 mL							8:24	11143 2 9 - 2 9 8 1 6 - A - 1 - B(IIII
8	(PFC_IDA)	N/A (320-29816-1)	285.52 g	257.2 mL				7/28/17	12_Days	4	pur 8	
	320-29409-B-1		28.32 g	0.50 mL							0:48	1111 3 2 0 - 2 9 6 1 6 - A - 2 - BIIII
9	(PFC_IDA_DOD5)	N/A (320-29409-1)	285.61 g	257.7 mL				7/7/17	8_Days	4	100ng 9	
	320-29409-B-2		27.93 g	0.50 mL							10:40 N	IIIKY white
10	320-29409-B-2 (PFC_IDA_DOD5)	N/A (320-29409-1)	281.00 g	253 mL				7/7/17	8_Days	4	port 10	
			28.03 g	0.50 mL							(0:40 M	

Printed: 7/18/2017

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(To Accompany Samples to Instruments)

Batch Number: 320-174599

Method Code: 320-3535_PFC-320

Analyst: Branscum, Cassie

Batch Open: 7/18/2017 7:22:00AM

Batch End:

-									Daton Life.
11	320-29409-B-4 (PFC_IDA_DOD5)	N/A (320-29409-1)	293.27 g	266 mL		7/7/17	8_Days	4	POPT 11
			27.25 g	0.50 mL					7:00 pm murky white
12	320-29409-B-4~MS (PFC_IDA_DOD5)	N/A (320-29409-1)	280.54 g	253.3 mL		7/7/17	8_Days	4	POR 12 INCHIBITION INCHIBITION
L			27.28 g	0.50 mL					come of 6:36) Clardy White
13	320-29409-B-4~MSD (PFC_IDA_DOD5)	N/A (320-29409-1)	272.30 g	245.4 mL		7/7 /17	8_Days	4	POR 13
L			26.89 g	0.50 mL					7:30 cloudy white
14	320-29713-A-1 (PFC_IDA)	Saint Gobain-Pipe CleaniogoAqtivities	264.12 g	236.4 mL		7/25/17	12_Days	2	POR 14
			27.74 g	0.50 mL					8:24
15	320-29713-A-2 (PFC_IDA)	Saint Gobain-Pipe CleaningoAqtivities	280.48 g	252.6 mL		7/25/17	12_Days	2	DOA 15
a			27.90 g	0.50 mL					8:00 """3 2 0 - 2 9 7 1 3 - A - 2 - B IIII
16 TC	320-29713-A-3 (PFC_IDA)	Saint Gobain-Pipe CleaningoActivities	274.81 g	247.3 mL		7/25/17	12_Days	2	ON 16 IIIIII III III III III III III III I
048			27.50 g	0.50 mL				1	6:48 closed y hite
17 9	320-29409-B-3 (PFC_IDA_DOD5)	N/A (320-29409-1)	290.75 g	263.2 mL		7/7/17	8_Days	4	
9			27.55 g	0.50 mL					7:48
18	320-29409-B-5 (PFC_IDA_DOD5)	N/A (320-29409-1)	286.94 g	260 mL		7/7/17	8_Days	4	POP18 RI
L			26.97 g	0.50 mL					(e:08pm 1873
19	N/A	N/A				N/A		N/Δ	004 19
ĺ	N/A							'"-	
F		N/A							
20	N/A					N/A	N/A	N/A	por 20
l									
L		l	<u> </u>	<u> </u>			<u> </u>	<u> </u>	

(To Accompany Samples to Instruments)

Batch Number: 320-174599

Method Code: 320-3535_PFC-320

Analyst: Branscum, Cassie

Batch Open: 7/18/2017 7:22:00AM

Batch End:

	Batch Notes
Manifold ID	12,13
Methanol ID	973171
Hexane ID	958899
Sodium Hydroxide ID	966118
First Start time	NA .
First End time	NA
SPE Cartridge Type	WAX 500mg
Solid Phase Extraction Disk ID Balance ID H2O ID Pipette ID	003036333A
Balance ID	QA-070
H20 ID	7/17/17
Solvent Name	0.3% NH4OH/MeOH
Solvent Lot #	
Analyst ID - Reagent Drop	ССВ
Analyst ID - SU Reagent Drop	
Analyst ID - SU Reagent Drop Witness	NSH
Acid Name	
Acid ID	NA
Reagent ID	NA
Reagent Lot Number	NA
SOP Number	WS-LC-0025

(To Accompany Samples to Instruments)

Batch Number: 320-174599

Method Code: 320-3535_PFC-320

Analyst: Branscum, Cassie

Batch Open: 7/18/2017 7:22:00AM

Batch End:

Batch Comment

		Comments
320-29409-B-1	Rework Comments:	Low 13C8 FOSA recoveries,
320-29409-B-2		Low 13C8 FOSA recoveries.
320-29409-B-4	-	
320-29409-B-4~MS		Low 13C8 FOSA recoveries.
† 320-29409-B-4~MSD	Rework Comments:	Low 13C8 FOSA recoveries.
320-29409-B-3 320-29409-B-5	Rework Comments:	Low 13C8 FOSA recoveries.
d 320-29409-B-5	Rework Comments:	Low 13C8 FOSA recovery.

(To Accompany Samples to Instruments)

Analyst: Branscum, Cassie

Batch Open: 7/18/2017 7:22:00AM

Batch End:

Reagent Additions Worksheet

Lab ID	Reagent Code	Amount Added	Final Amount	Ву	Witness
MB 320-174599/1	LCMPFCSU_00081	500 uL	0.50 mL	ach 7-25-17	NSH 7/25/17
LCS 320-174599/2	LCMPFCSU_00081	500 uL	0.50 mL		1
LCS 320-174599/2	LCPFCSP_00100	500 uL	0.50 mL		
LCSD 320-174599/3	LCMPFCSU_00081	500 uL	0.50 mL		
LCSD 320-174599/3	LCPFCSP_00100	500 uL	0.50 mL		
320-29732-A-4	LCMPFCSU_00081	500 uL	0.50 mL		
160-23181-A-1	LCMPFCSU_00081	500 uL	0.50 mL		
160-23181-A-2	LCMPFCSU_00081	500 uL	0.50 mL		
320-29816-A-1	LCMPFCSU_00081	500 uL	0.50 mL		
320-29816-A-2	LCMPFCSU_00081	500 uL	0.50 mL		
320-29409-B-1	LCMPFCSU_00081	500 uL	0.50 mL		
320-29409-B-2	LCMPFCSU_00081	500 uL	0.50 mL		
320-29409-B-4	LCMPFCSU_00081	500 uL	0.50 mL		
320-29409-B-4 MS	LCMPFCSU_00081	500 uL	0.50 mL		
320-29409-B-4 MS	LCPFCSP_00100	500 uL	0.50 mL		
320-29409-B-4 MSD	LCMPFCSU_00081	500 uL	0.50 mL	,	
320-29409-B-4 MSD	LCPFCSP_00100	500 uL	0.50 mL		
320-29713-A-1	LCMPFCSU_00081	500 uL	0.50 mL		

Printed: 7/18/2017

Batch Number: 320-174599

Method Code: 320-3535_PFC-320

Page 5 of 6

(To Accompany Samples to Instruments)

Batch Number: 320-174599

Analyst: Branscum, Cassie

Cassie Batch Open: 7/18/2017 7:22:00AM

Batch End:

Method	Code:	320-3535	_PFC-320

320-29713-A-2	LCMPFCSU_00081	500 uL	0.50 mL	CB, 7-75-17	NSH 7/25/17
320-29713-A-3	LCMPFCSU_00081	500 uL	0.50 mL		1
320-29409-B-3	LCMPFCSU_00081	500 uL	0.50 mL	,	
320-29409-B-5	LCMPFCSU_00081	500 uL	0.50 mL		T V

	Other Reagents:	
Reagent	Amount/Units	Lot#:
,		

Printed: 7/18/2017



Sacramento Preparation Data Review Checklist

Preparation Batch Number(s): 174599 Test: DFC (water)	Ry
Earliest Holding Time: 7/0/17		
	T .	· · ·
Sample List Tab	1 st Level	2 nd Leve
Samples identified to the correct method	Reviewer	Reviewe
All necessary NCMs filed (including holding time)		1
Method/sample/login/QAS checked and correct	 	
	 	V_
Worksheet Tab	1 st Level	2 nd Leve
All samples properly preserved	Reviewer	Reviewe
Weights in anticipated range and not targeted	M	NA
All additional test requirements performed, documented, and uploaded to TALS		
correctly (e.g. final amount, initial amount, turbidity, and Cl Check)		/
The pH is transcribed correctly in TALS	NA	S A
All additional information transcribed into TALS is correct and raw data is	IM	14/4
attached		V
Comments are transcribed correctly in TALS		./
	1 st Level	2 nd Level
Reagents Tab	Reviewer	Reviewer
All necessary reagents not expired and entered into TALS	I LOVIGING!	1/CAICAC!
All spike amounts correct and added to necessary samples and QC		
	1 st Level	and .
Batch Information	Reviewer	2 nd Level
Date and time accurate and entered into TALS correctly	Keviewei	Reviewer
All necessary 'batch information' complete and entered into TALS correctly		0/
**************************************	7/20	10
Level Reviewer: Date:	1/20	
2 nd Level Reviewer: Date:	Al 201	17
Comments:	1 7	

02

Batch Number: 320-173307

Method Code: 320-Shake_Bath_14D-320

Solid SW-846-3500 Analysis Sheet

(To Accompany Samples to Instruments)

Analyst: Arauz, Horacio J

A8 7/2/17

Batch Open: 7/10/2017 1:17:00PM

Batch End: 7/20/2017 9:40:00PM

Shake Extraction with Ultrasonic Bath Extraction

	Input Sample Lab ID (Analytical Method)	SDG (Job #)	Initial Amount	Final Amount	Due Date	Analytical TAT	Div Rank	Comments	Output Sample Lab ID
1	MB~320-173307/1 N/A	N/A	5.00 g	1.00 mL	N/A	N/A	N/A	Time that came off the N-evap: 6:35 pm	
2	LCS~320-173307/2 N/A	N/A	5.00 g	1.00 mL	N/A	N/A	N/A	Time that came off the N-evap: 8:47 pm (These ports were barely open.)	
3	320-29517-A-21 (PFC_IDA_DOD5)	N/A (320-29517-1)	5.03 g	1.00 mL	7/5/17	8_Days	4		ZX Manananananananananan
Page	320-29517-A-21~MS (PFC_IDA_DOD5)	N/A (320-29517-1)	4.96 g	1.00 mL	7/5/17	8_Days	4		
1054 of	320-29517-A-21~MSD (PFC_IDA_DOD5)	N/A (320-29517-1)	5.05 g	1.00 mL	7/5/17	8_Days	4		× Manania in

(To Accompany Samples to Instruments)

Batch Number: 320-173307

Analyst: Arauz, Horacio J

Method Code: 320-Shake_Bath_14D-320

Batch Open: 7/10/2017 1:17:00PM

Batch End: 7/2017 21:40

Shake Extraction with Ultrasonic Bath Extraction

	Input Sample Lab ID (Analytical Method)	SDG (Job#)	Initial Amount	Final Amount	Due Date	Analytical TAT	Dlv Rank	Comments	Output Sample Lab ID
	MB~320-173307/1 N/A	N/A	5.00 g	1.00 mL	N/A	N/A	N/A	6:35 pm	
	LCS~320-173307/2 N/A	N/A	5.00 g	1.00 mL	N/A	N/A	N/A	8:47 7 points	
	320-29517-A-21 (PFC_IDA_DOD5)	N/A (320-29517-1)	5.03 g	1.00 mL	7/5/17	8_Days	4	barely	
	320-29517-A-21-MS (PFC_IDA_DOD5)	N/A (320-29517-1)	4.96 g	1.00 mL	7/5/17	8_Days	4	open.	
t dige	320-29517-A-21~MSD (PFC_IDA_DOD5)	N/A (320-29517-1)	5.05 g	1.00 mL	7/5/17	8_Days	4	±)	

Printed: 7/10/2017

(To Accompany Samples to Instruments)

Batch Number: 320-173307

Analyst: Arauz, Horacio J

Method Code: 320-Shake_Bath_14D-320

Batch Open: 7/10/2017 1:17:00PM

Batch End: 7/20/2017 9:40:00PM

	Batch Notes
Balance ID	QA-070
Blank Sand Lot #	FISHER 162639
Filter ID	NA
Millipore Water Dispense Date	7-17-17
Analyst ID - Reagent Drop Witness	TN
SPE Cartridge ID	017037054A
SPE Cartridge Type	WAX 150mg
Hexane ID Methanol ID Ammonium Hydroxide/MeOH ID Sodium Hydroxide ID	958902
Methanol ID	973180
Ammonium Hydroxide/MeOH ID	987338
Sodium Hydroxide ID	977629
Methanolic Potassium Hydroxide ID	976014
Manifold ID	6
Interference check solution ID	NA
Acetic Acid ID	429065
Batch Comment	Spiked bottle #3; add on #4 pipette HD05018

Printed 7/20/2017

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Solid SW-846-3500 Analysis Sheet

(To Accompany Samples to Instruments)

Batch Number: 320-173307

Analyst: Arauz, Horacio J

Method Code: 320-Shake_Bath_14D-320

Batch Open: 7/10/2017 1:17:00PM

Batch End: 7/20/2017 9:40:00PM

Comments

320-29517-A-21

Method Comments: include add on spikes

320-29517-A-21~MS

Method Comments: include add on spikes

320-29517-A-21~MSD

Method Comments: include add on spikes

Printed: 7/20/2017

Page 3 of 5

(To Accompany Samples to Instruments)

Batch Number: 320-173307

Analyst: Arauz, Horacio J

Method Code: 320-Shake_Bath_14D-320

Batch Open: 7/10/2017 1:17:00PM

Batch End:

		Batch Notes
	Balance ID	QA-070
	Blank Sand Lot #	FISHER 162639
	Filter ID	NA
M	lillipore Water Dispense Date	7-17-17
Analys	st ID - Reagent Drop Witness	
	SPE Cartridge ID	017037054A
J	SPE Cartridge Type	WAX 150mg
S Am	Hexane ID	958902
) 	Methanol ID	
Am	monium Hydroxide/MeOH ID	987338
	Sodium Hydroxide ID	97 7629
Methar	nolic Potassium Hydroxide ID	
	Manifold ID	6
11	nterference check solution ID	
	Acetic Acid ID	429065
	Batch Comment	Spiked bottle #3; add on #4 pipette HD05018

(To Accompany Samples to Instruments)

Batch Number: 320-173307

Method Code: 320-Shake_Bath_14D-320

Analyst: Arauz, Horacio J

Batch Open: 7/10/2017 1:17:00PM

Batch End:

Reagent Additions Worksheet

Lab ID	Reagent Code	Amount Added	Final Amount	Ву	Witness
MB 320-173307/1	LCMPFC2SU_00025	1000 uL	1.00 mL	41- 91- F ACH	TH OHIOIT
MB 320-173307/1	LCMPFCSU_00079	1000 uL	1.00 mL		01/0/1/
LCS 320-173307/2	LCMPFC2SU_00025	1000 uL	1.00 mL		
LCS 320-173307/2	LCMPFCSU_00079	1000 uL	1.00 mL		
LCS 320-173307/2	LCPFC2SP_00032	1.00 mL	1.00 mL		
LCS 320-173307/2	LCPFCSP_00100	1.00 mL	1.00 mL		
	LCMPFC2SU_00025	1000 uL	1.00 mL		
320-29517-A-21 320-29517-A-21 320-29517-A-21 MS	LCMPFCSU_00079	1000 uL	1.00 mL		
320-29517-A-21 MS	LCMPFC2SU_00025	1000 uL	1.00 mL		
320-29517-A-21 MS	LCMPFCSU_00079	1000 uL	1.00 mL		
320-29517-A-21 MS	LCPFC2SP_00032	1.00 mL	1.00 mL		
320-29517-A-21 MS	LCPFCSP_00100	1.00 mL	1.00 mL		
320-29517-A-21 MSD	LCMPFC2SU_00025	1000 uL	1.00 mL		.
320-29517-A-21 MSD	LCMPFCSU_00079	1000 uL	1.00 mL		
320-29517-A-21 MSD	LCPFC2SP_00032	1.00 mL	1.00 mL		
320-29517-A-21 MSD	LCPFCSP_00100	1.00 mL	1.00 mL	7	—

Printed: 7/10/2017

(To Accompany Samples to Instruments)

Batch Number: 320-173307

Analyst: Arauz, Horacio J

Method Code: 320-Shake_Bath_14D-320

Batch Open: 7/10/2017 1:17:00PM

Batch End:

her Reagents:	
Amount/Units	Lot#:
-	

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Printed: 7/10/2017



Sacramento Preparation Data Review Checklist

Preparation Batch Number(s): 173307 Test: PFC (5	.)	
Earliest Holding Time: 07/10/17	/	
	_	
		,
Committee 11 4 Miles	1 st Level	2 nd Level
Sample List Tab Samples identified to the correct method	Reviewer	Reviewer
All necessary NCMs filed (including holding time)	 	
Method/sample/login/QAS checked and correct	NA	N/A_
The state of the s		
201. 4 . 1	1 st Level	2 nd Level
Worksheet Tab All samples properly preserved	Reviewer	Reviewer
	NA	N/A
Weights in anticipated range and not targeted		
All additional test requirements performed, documented, and uploaded to TALS correctly (e.g. final amount, initial amount, turbidity, and Cl Check)		
The pH is transcribed correctly in TALS		V
All additional information transcribed into TALS is correct and raw data is	NA	N/A
attached	_	
Comments are transcribed correctly in TALS		/
The state of the s		V
Decreet Tel	1 st Level	2 nd Level
Reagents Tab	Reviewer	Reviewer
All necessary reagents not expired and entered into TALS All spike amounts correct and added to necessary samples and QC		
This spine amounts correct and added to necessary samples and QC		
-	1 st Level	2 nd Level
Batch Information	Reviewer	Reviewer
Date and time accurate and entered into TALS correctly		V
All necessary 'batch information' complete and entered into TALS correctly		V
1 ^{št} Level Reviewer:Date:	-120	1115
	1/20	4/-
2 nd Level Reviewer: Date: D	+1 801	+
Comments:	(/ / C	



Test America - Sacramento

Sample Dilution Record

Method ID PFC - IDA	Job# See be be
Analyst (Print Name) (TP) The p Phonesupl	Analyst Initials TP
Date 7/24/17	

Sample#	Original F.V. (uL)	Aliquot (uL)	Dilution F.V. (uL)	Dilution Factor
29713-3	20C)	60	300	5×
29517-21	1000	60.	300	5X
-21MS	1000	60		
U -21MID	1000	60		1
29682-31	500	60	300	5×
-31HS				
U - 31 MSD		4		1
29732 - 1	506	30	300	10×
				10/
	<u> </u>			

Comments:



490-120783; 29814; 29543

West Sacramento

HPLC/LCMS Data Review Checklist

490-120783; 29814; 29543	5776; 459	831: Uca	22. UCE
Job Number(s): 29732; 160-23181; 29713; Work List ID(s):	495 5BC7	26/17	סנד , ד <i>יך</i>
Extraction Batch: 175097; 175074 Analysis Batch(es):_		•	175951:1
Delivery Rank 4 · 2 Due Date:			1754
A Calibration/Instrument Run QC	1 st Level	2 nd Level	N/A
1. ICAL locked in Chrom and TALS? ICAL Batch# 175476; 175477	/		
ICAL, CCV Frequency & Criteria met.	~		
 RF_{average} criteria appropriate for the method. 	~		
 Linear Regression criteria appropriate if required (r ≥ 0.995). 	V	/	
 Quadratic fit criteria appropriate if required (r² ≥ 0.990). 	1		
 For Linear Regression and Quadratic fit – Does the y-intercept support ½ the reporting limit as described in CA-Q-S-005? 	~	_	
All curve points show calculated concentrations.	V	/	
Peaks correctly ID'd by data system.	V		
5. Tune check frequency & criteria met and Tune check report attached.	V		
B. QA/QC			
Are all QC samples properly linked in TALS?	V		
Method blank, LCS/LCSD and MS/SD frequencies met.	V		
3. LCS/LCSD and MB data are within control limits. If not, NCM is present.		/	
4. Are MS/MSD recoveries and RPD within control limits?	7		
5. Holding Times were met for prep and analytical.	~		
6. IS/Surrogate recoveries meet criteria or properly noted.			
C. Sample Analysis			
Was correct analysis performed and were project instructions followed?	V		
2. If required, are compounds within RT windows?	V		
3. If required, are positive hits confirmed and >40% RPD flagged?		_	
4. Manual Integrations reviewed and appropriate.			
5. All analytes correctly reported. (Primary, secondary, acceptable status)	~		
6. Correct reporting limits used. (based on client request, prep factors, and			
dilutions)			
D Documentation			
Are all non-conformances documented/attached? NCM#	/		
2. Do results make sense (e.g. dilutions, etc.)?	~		
Have all flags been reviewed for appropriateness?	V		
4. For level 3 and 4 reports, have forms and raw data been reviewed?		/	
5. Was QC Checker run for this job?			

*Upon completion of this checklist, the reviewer must scan and attach the checklist to the TALS job.

1 st Level (Analyst):	Date: 7/26/17
2 nd Level Reviewer: SBC-1/26/17	Date: 7/28/17

NCMS: 95290; 95505; 95293; 95489; 95483; 95485; 95486; 95487

45776

Page: 1

TestAmerica Laboratories Worklist QC Batch Report

Worklist Name:

23JUL2017A_PFC

Worklist Number:

Instrument Name: A8_N

Chrom Method: A8_N

Data Directory:

\\ChromNa\Sacramento\ChromData\A8_N\20170724-45776.b

QC Batching:

Disabled

Limit Group Batching: Enabled

QC Batch: 1	LC PFC_DOD ICAL	LC PFC ICAL
# 4 001/14	Raw Batch: 175528	Raw Batch: 175529
# 1 CCV L4 # 2 MB 320-175097/1-A # 3 LCS 320-175097/2-A # 4 LCSD 320-175097/3-A # 5 320-29788-A-1-A # 6 320-29788-A-3-A # 8 320-29788-A-4-A # 9 320-29788-A-5-A # 10 320-29748-A-1-A # 11 320-29748-A-2-A # 12 CCV L5 # 13 320-29748-A-3-A # 14 320-29748-A-3-A # 15 320-29748-A-5-A # 16 320-29732-C-1-A	#1 CCV L4 #2 MB 320-175097/1-A 71/2PC #3 LCS 320-175097/2-A PFTEAT #4 LCSD 320-175097/3-A PFTEAT WAR LOW 95290 RX PFTEDA Still high in USD NCM 95489 #12 CCV L5	#1 CCV L4 #2 MB 320-175097/1-A #3 LCS 320-175097/2-A #4 LCSD 320-175097/3-A #5 320-29788-A-1-A RX FOSA: PFICIA #6 320-29788-A-3-A RX FOSA: PFICIA #8 320-29788-A-4-A OK- #9 320-29788-A-1-A #10 320-29748-A-1-A #11 320-29748-A-3-A #12 CCV L5 #13 320-29748-A-3-A #15 320-29748-A-3-A
#17 320-29732-C-2-A #18 320-29732-C-3-A #19 320-29302-B-4-A #20 320-29302-B-8-A #21 CCV L4 #22 320-29302-B-10-A #23 320-29302-B-10-B MS #24 320-29302-B-10-C MSD #25 CCV L5	#21 CCV L4	#19 320-29302-B-4-A PM necks #20 320-29302-B-8-A PM necks #21 CCV L4 +0 raise #22 320-29302-B-10-A RL #23 320-29302-B-10-B MS #24 320-29302-B-10-C MSD FOBA #25 CCV L5

175074

LCS/LCSD'1.R Samples < RL 95162 Came day as new CORL 1754777 4pulps Report Date: 25-Jul-2017 09:51:44

Chrom Revision: 2.2 20-Jun-2017 07:42:36

Page: 1

TestAmerica Laboratories Worklist QC Batch Report

Worklist Name:

24JUL2017F_PFC

Worklist Number: 45831

Instrument Name: A8_N

Chrom Method: **A8 N**

Data Directory:

\\ChromNa\Sacramento\ChromData\A8_N\20170725-45831.b

QC Batching: Disabled Limit Group Batching: Enabled

QC Batch: 1	LC PFC_DOD ICAL Raw Batch: 175757	LC PFC ICAL Raw Batch: 175758
# 1 CCV L5 # 2 320-29732-C-1-A # 3 320-29732-C-2-A # 4 CCV L4	# 1 CCV L5 # 2 320-29732-C-1-A # 3 320-29732-C-2-A # 4 CCV L4	#1 CCV L5 #4 CCV L4

ccel 175631

RLDL 95293

TestAmerica Laboratories Worklist QC Batch Report

Worklist Name:

25JUL2017D_PFC

Worklist Number:

45877

Instrument Name: A8_N Data Directory:

Chrom Method: A8 N

QC Batching: Disabled

\\ChromNa\Sacramento\ChromData\A8_N\20170726-45877.b Limit Group Batching: Enabled

QC Batch: 1	LC PFC_DOD ICAL	LC PFC ICAL	LC PFAS ICAL
	Raw Batch: 175951	Raw Batch: 175952	Raw Batch: 175953
# 1 CCV L4	# 1 CCV L4	#1 CCV L4	1030
# 2 MB 320-175074/1-A	# 2 MB 320-175074/1-A	# 2 MB 320-175074/1-A	LCS high PATEPA 120783
# 3 LCS 320-175074/2-A	# 3 LCS 320-175074/2-A	# 3 LCS 320-175074/2-A	
# 4 LCSD 320-175074/3-A		# 4 LCSD 320-175074/3-A	29814
# 5 160-23181-A-3-A			# 5 160-23181-A-3-A
# 6 160-23181-A-4-A	DV WHINP OSIB	# 5 160-23181-A-3-A # 6 160-23181-A-4-A # 7 160-23181-A-5-A # 8 160-23181-A-6-A	# 6 160-23181-A-4-A
# 7 160-23181-A-5-A	KA William	# 7 160 - 23181-A-5-A	# 7 160-23181-A-5-A
# 8 160-23181-A-6-A	Sharro	# 8 160-23181-A-6-A	# 8 160-23181-A-6-A
# 9 320-29732-A-1-A	# 9 320-29732-A-1-A PFTEDA		
#10 320 - 29732-A-2-A	#10 320-29732-A-2-A		
#11 320-29732-A-3-A	#11 320-29732-A-3-A		
#12 CCV L5	#12 CCV L5	#12 CCV L5	
#13 320-29713-A-4-A		#13 320 - 29713-A-4-A *50 X	#13 320-29713-A-4-A
#14 320-29713-A-5-A		#14 320-29713-A-5-A R I	#14 320-29713-A-5-A
#15 480-120783-A-1-A			#15 480-120783-A-1-A
#16 480-120783-A-2-A			#16 480-120783-A-2-A
#17 480-120783-A-3-A		#17 480-120783-A-3-A	#17 480-120783-A-3-A
#18 480-120783-A-4-A		#18 480-120783-A-4-A	#18 480-120783-A-4-A
#19 480-120783-A-5-A	7.50		#19 480-120783-A-5-A
#20 480-120783-A-6-A			#20 480-120783-A-6-A
#21 480-120783-A-7-A			#21 480-120783-A-7-A
#22 320-29814-A-3-A		#22 320-29814-A-3-A FOSALI	#22 320-29814-A-3-A
	#23 CCV L4	#23 CCV L4 🕊 🕊	
#24 320-29715-A-1-A		#24 320-29715-A-1-A	#24 320-29715-A-1-A
#25 320-29715-A-2-A			#25 320-29715-A-2-A
#26 320-29715-A-3-A			#26 320-29715-A-3-A
#27 CCV L5	#27_CCV L5	#27 CCV L5	

CCVL 175762 CCVL 175763

CS/LCSD 7.R

PFTEDA; Samples < RL

NCM 95483

PHPA IDD high 95485

UND high 95486

Several high 95487

Report Date: 26-Jul-2017 08:50:06

Chrom Revision: 2.2 20-Jun-2017 07:42:36

Page: 1

TestAmerica Laboratories Worklist QC Batch Report

Worklist Name:

25JUL2017I_PFC

Worklist Number: 45883

Instrument Name: A8_N

A8_N

Data Directory:

Chrom Method: \\ChromNa\Sacramento\ChromData\A8_N\20170726-45883.b

QC Batching:

Disabled

Limit Group Batching: Enabled

QC Batch: 1	LC PFC_DOD ICAL Raw Batch: 175966	LC PFC ICAL Raw Batch: 175967
1	# 2 320-29543-A-68-A	# 1 CCV L4 # 3 CCV L5

cer 175762

A8 7/23/17

(To Accompany Samples to Instruments)

Batch Number: 320-175097 Analyst: Branscum, Cassie

Method Code: 320-3535_PFC-320 & Sel Num: Sampus accidently were died for 50 mins instead of 15 mins. *

Solid-Phase Extraction (SPE)

Batch Open: 7/20/2017 10:13:00AM

Batch End: 7/22/2017 12:30:00PM

	Input Sample Lab ID (Analytical Method) MB~320-175097/1	SDG (Job #) N/A	GrossWt TareWt	InitAmnt FinAmnt	Rcvd	PHs Adj1	Adj2	Due Date	Analytical TAT	Div Rank	Comments	Output Sample Lab ID
1	N/A	IN/A		250 mL				N/A	N/A	N/A		LUMBA SE DA TURA DA ANTA DEL ANTA DEL SEN DOS SEN DOS DEL RECUERSONO
2	LCS~320-175097/2	N/A		0.50 mL						L		Takan da
	N/A			250 mL				N/A	N/A	N/A	RI 1047	and and the state of the state
,	LCSD~320-175097/3	N/A		0.50 mL								
	N/A			250 mL				N/A	N/A	N/A	RI BUHON	a Manal Amin'i A
d ag	320-29788-A-1	N/A	200 00	0.50 mL							PATERA	INDITECTORS TO THE STREET OF THE PROPERTY OF THE STREET OF
ge d	(PFC_IDA)	(320-29788-1)		259.8 mL				7/31/17	14_Days	2		Waidhin's sir an
1	320-29788-A-2	N/A	27.62 g	0.50 mL								11111 3 2 5 - 2 9 7 8 8 - 4 - 1
7	(PFC_IDA)	(320-29/88-1)		256.8 mL				8/1/17	15_Days	2		Malabidatkatata
7	320-29788-A-3	N/A	27.52 g 283.58 g	0.50 mL 255.8 mL								3 2 8 - 2 9 7 8 8 - A - 2 - A1III
	(PFC_IDA)	(320-29788-1)						8/1/17	15_Days	2		Majabikaakinkkindininto
İ	320-29788-A-4	N/A	27.75 g 288.45 g	0.50 mL 260.7 mL								
	(PFC_IDA)	(020-23/00-1)		0.50 mL			ļ	8/1/17	15_Days	2		Matandbatukindiki
Ì	320-29788-A-5	N/A		267.5 mL								
	(PFC_IDA)	(320-29/88-1)		0.50 mL			ĺ	8/1/17	15_Days	2		Malanin de de de de de de de de de de de de de
	320-29748-A-1 (PFC_IDA)	N/A	266.59 g	239 mL				7/24/47	45.5			
	- /	(320-29740-1)		0.50 mL]	}		7/31/17	15_Day_Rush	2	on hold	Majužu Ariutāl Šužo ir štarviru burk V U
	320-29748-A-2 (PFC_IDA)	N/A		253.5 mL				7/31/17	15_Day_Rush			
		· '	27.66 g	0.50 mL	- 1	- 1		,,,,,,	-o_bay_Rush	2	onhold	
						Ì	İ	ĺ				

Printed: 7/22/2017

(To Accompany Samples to Instruments)

Batch Number: 320-175097

Method Code: 320-3535_PFC-320

Analyst: Branscum, Cassie

Batch Open: 7/20/2017 10:13:00AM

Batch End: 7/22/2017 12:30:00PM

-11 [320-29748-A-3	N/A	T	-							atch End: 7/22/2017 12:30:00PM
''	(PFC_IDA)	(320-29748-1)	279.04 g	251.2 mL			7/31/17	15_Day_Rush	2	on hold	Uldininishirinininininini
- 1	320-29748-A-4	- NA	27.85 g	0.50 mL	<u>L</u>					NO.	1111 3 2 6 - 2 9 7 4 6 - A - 3 - A 1811
12	(PFC_IDA)	N/A (320-29748-1)	272.72 g	245.3 mL			7/31/17	15_Day_Rush	2		<u>Mainninin munta anna a</u>
L		İ	27.40 g	0.50 mL	1 1						
13	320-29748-A-5 (PFC_IDA)	N/A (320-29748-1)	280.07 g	252.4 mL			7/31/17	15_Day_Rush	2	1	
L			27.68 g	0.50 mL							
14	320-29732-C-1 (PFC_IDA_DOD5)	N/A (320-29732-1)	283.61 g	256.3 mL		1	7/23/17	16_Days	4 (IOX	I TO HE SEL WE THE CORP AT SER WITH HER SELECTION AS SERECT
			27.32 g	0.50 mL				·	•	(IOA)	Mara hib da a ana a finita di hibi di Mara Mara di Mara di Mara di Mara di Mara di Mara di Mara di Mara di Mara
15	320-29732-C-2	N/A	+ -		 	 					
	(PFC_IDA_DOD5)	(320-29732-1)	278.12 g	250.8 mL			7/23/17	16_Days	4	Milky white samples after	
a			27.30 g	0.50 mL	1	1 1				samples after	Diginal Lail a shall
Page 16	320-29732-C-3	N/A	 	 		┼─-┤					prepped twill other parch 175074
₫	(PFC_IDA_DOD5)	(320-29732-1)	286.52 g	259.5 mL		1 1	7/23/17	16_Days	4	Milky white	Dalminininininininininininini
1069 d				† <u> </u>		1 [samples after	
	320-29302-B-4		26.98 g	0.50 mL		1 1				P (Rt)	
17 7	(PFC_IDA)	N/A (320-29302-1)	271.11 g	244 mL			7/10/17	12_Days	4	RX- Milky white	
	320-29302-B-8		27.14 g	0.50 mL						samples after FV	
18		N/A	278.78 g	250.9 mL		+-+	7/40/47	10.5			
ļ	(PFC_IDA)	(320-29302-1)		200.5 1112		1 1	7/10/17	12_Days	4	RX- Milky white	i în în în în în în în în în în în în în
i			27.04	0.50		1				samples after FV	3 2 8 - 2 9 3 6 2 - B - 8 - A
. <u>.</u>	320-29302-B-10	N/A	27.84 g	0.50 mL							
19	(PFC_IDA)	(320-29302-1)	286.26 g	259 mL	ŀ		7/10/17	12_Days	4	RX- Milky white	I SOUTH THE COMMITTEE COMMISSION OF THE COMMISSI
		(/	•	samples after	Marin in in in in in in in in in in in in i
			27.27 g	0.50 mL	j					FV	
20	320-29302-B-10~MS	N/A	293.10 g	265.9 mL		++					
	(PFC_IDA)	(320-29302-1)	593.10 g	205.9 IIIL		1 1	7/10/17	12_Days	4	RX- Milky white	Wild in in this is a build in the build in the little is the little in the little is the little in the little in the little in the little is the little in t
			22.00			1 1				samples after FV	1116-3-2-82-9-3-8-2-1819-18-M-S
a. -	320-29302-B-10~MSD	N/A	27.20 g	0.50 mL							
21	(PFC_IDA)	(320-29302-1)	287.77 g	260 mL			7/10/17	12_Days	4	RX- Milky white	I THE THE STATE OF STATE AND A STATE OF
	,	. ===== .,	 	 	1					samples after	
			27.77 g	0.50 mL						FV	41 5 2141
_			<u> </u>	<u> </u>		<u> </u>					

Printed: 7/22/2017

(To Accompany Samples to Instruments)
Analyst: Branscum, Cassie

Batch Number: 320-175097

Method Code: 320-3535_PFC-320

Batch Open: 7/20/2017 10:13:00AM Batch End: 7/22/2017 12:30:00PM

		Batch Notes
	Manifold ID	13,14
	Methanol ID	983105
	Hexane ID	981623
	Sodium Hydroxide ID	988541
	First Start time	NA .
	First End time	NA NA
b	SPE Cartridge Type	WAX 500mg
Page 1070 of 1104	Solid Phase Extraction Disk ID	003036333A
1076	Balance ID	QA-070
<u>[</u>	H2O ID	7/17/17
1	Pipette ID	N32728F
	Solvent Name	0.3% NH4OH/MeOH
	Solvent Lot #	
	Analyst ID - Reagent Drop	
	Analyst ID - SU Reagent Drop	
	Analyst ID - SU Reagent Drop Witness	NSH
	Acid Name	
	Acid ID	NA .
	Reagent ID	NA NA
	Reagent Lot Number	NA .
	SOP Number	WS-LC-0025

(To Accompany Samples to Instruments)

Batch Number: 320-175097

Analyst: Branscum, Cassie

Method Code: 320-3535_PFC-320

Batch Open: 7/20/2017 10:13:00AM

Batch End: 7/22/2017 12:30:00PM

Batch Comment NA

Comments								
320-29302-B-4								
320-29302-B-8	Rework Comments:	FOSA IDA<1%						
320-29302-B-10	Rework Comments:	FOSA IDA<1%						
320-29302-B-10~MS	Rework Comments:	FOSA IDA low						
320-29302-B-10~MSD	Rework Comments:	FOSA IDA low						
Page	Rework Comments:	FOSA IDA low						

Printed 7/22/2017

Page 4 of 7

(To Accompany Samples to Instruments)

Analyst: Branscum, Cassie

Batch Open: 7/20/2017 10:13:00AM

Batch End:

Reagent Additions Worksheet

Lab ID	Reagent Code	Amount Added	Final Amount	Ву	Witness
MB 320-175097/1	LCMPFC2SU_00025	500 uL	0.50 mL	Ce5 7-20-17	NSH 7/20/17
MB 320-175097/1	LCMPFCSU_00081	500 uL	0.50 mL	1	1100 1100 117
LCS 320-175097/2	LCMPFC2SU_00025	500 uL	0.50 mL		
LCS 320-175097/2	LCMPFCSU_00081	500 uL	0.50 mL		
LCS 320-175097/2	LCPFC2SP_00032	500 uL	0.50 mL		
LCS 320-175097/2	LCPFCSP_00100	500 uL	0.50 mL		
LCSD 320-175097/3	LCMPFC2SU_00025	500 uL	0.50 mL		
LCSD 320-175097/3	LCMPFCSU_00081	500 uL	0.50 mL		
LCSD 320-175097/3	LCPFC2SP_00032	500 uL	0.50 mL		
LCSD 320-175097/3	LCPFCSP_00100	500 ml w	0.50 mL		
320-29788-A-1	LCMPFC2SU_00025	500 uL	0.50 mL		
320-29788-A-1	LCMPFCSU_00081	500 uL	0.50 mL		
320-29788-A-2	LCMPFC2SU_00025	500 uL	0.50 mL		
320-29788-A-2	LCMPFCSU_00081	500 uL	0.50 mL		
320-29788-A-3	LCMPFC2SU_00025	500 uL	0.50 mL		
320-29788-A-3	LCMPFCSU_00081	500 uL	0.50 mL		
320-29788-A-4	LCMPFC2SU_00025	500 uL	0.50 mL		
320-29788-A-4	LCMPFCSU_00081	500 uL	0.50 mL		

Batch Number: 320-175097

Method Code: 320-3535_PFC-320

(To Accompany Samples to Instruments)

Analyst: Branscum, Cassie

Method Code: 320-3535_PFC-320

Batch Number: 320-175097

Batch Open: 7/20/2017 10:13:00AM

				Batch End:
320-29788-A-5	LCMPFC2SU_00025	500 uL	0.50 mL	(8),7-20-17 NSH 7/20/17
320-29788-A-5	LCMPFCSU_00081	500 uL	0.50 mL	100/14
320-29748-A-1	LCMPFC2SU_00025	500 uL	0.50 mL	
320-29748-A-1	LCMPFCSU_00081	500 uL	0.50 mL	
320-29748-A-2	LCMPFC2SU_00025	500 uL	0.50 mL	
320-29748-A-2	LCMPFCSU_00081	500 uL	0.50 mL	
320-29748-A-3	LCMPFC2SU_00025	500 uL	0.50 mL	
320-29748-A-3	LCMPFCSU_00081	500 uL	0.50 mL	
320-29748-A-4	LCMPFC2SU_00025	500 uL	0.50 mL	
320-29748-A-4	LCMPFCSU_00081	500 uL	0.50 mL	
320-29748-A-5	LCMPFC2SU_00025	500 uL	0.50 mL	
320-29748-A-5	LCMPFCSU_00081	500 uL	0.50 mL	
320-29732-C-1	LCMPFC2SU_00025	500 uL	0.50 mL	
320-29732-C-1	LCMPFCSU_00081	500 uL	0.50 mL	
320-29732-C-2	LCMPFC2SU_00025	500 uL	0.50 mL	
320-29732-C-2	LCMPFCSU_00081	500 uL	0.50 mL	
320-29732-C-3	LCMPFC2SU_00025	500 uL	0.50 mL	
320-29732-C-3	LCMPFCSU_00081	500 uL	0.50 mL	
320-29302-B-4	LCMPFC2SU_00025	500 uL		
320-29302-B-4	LCMPFCSU 00081	500 uL	0.50 mL	
320-29302-B-8	LCMPFC2SU_00025	500 uL	0.50 mL 0.50 mL	

Printed: 7/20/2017

(To Accompany Samples to Instruments)

Batch Number: 320-175097

Analyst: Branscum, Cassie

Method Code: 320-3535_PFC-320

Batch Open: 7/20/2017 10:13:00AM

Batch End:

Г							
-	320-29302-B-8	LCMPFCSU_00081	500 uL	0.50 mL	CE 3	7-20-17	NSH 7/20/17
	320-29302-B-10	LCMPFC2SU_00025	500 uL	0.50 mL		1	7
	320-29302-B-10	LCMPFCSU_00081	500 uL	0.50 mL			
L	320-29302-B-10 MS	LCMPFC2SU_00025	500 uL	0.50 mL	 		
	320-29302-B-10 MS	LCMPFCSU_00081	500 uL	0.50 mL			
	320-29302-B-10 MS	LCPFC2SP_00032	500 uL	0.50 mL			
L	320-29302-B-10 MS	LCPFCSP_00100	500 uL	0.50 mL	 	_	
L	320-29302-B-10 MSD	LCMPFC2SU_00025	500 uL	0.50 mL			
Page	320-29302-B-10 MSD	LCMPFCSU_00081	500 uL	0.50 mL	 		
107	320-29302-B-10 MSD	LCPFC2SP_00032	500 uL	0.50 mL	 		
4 of	320-29302-B-10 MSD	LCPFCSP_00100	500 uL	0.50 mL		}	
1102				3.00 IIIE			

	Other Reagents:	
Reagent	Amount/Units	Lot#:

Printed = 7/20/2017



Sacramento Preparation Data Review Checklist

Preparation Batch Number(s): 175097 Test: PFC_IC	DA (W) Has
Earliest Holding Time: 7-3-17		. /
Sample List Tab	1 st Level Reviewer	2 nd Level
Samples identified to the correct method	- Keviewei	Reviewer
All necessary NCMs filed (including holding time)	 	
Method/sample/login/QAS checked and correct	 	- V
0 5	1 st Level	2 nd Level
Worksheet Tab	Reviewer	Reviewer
All samples properly preserved	1 A D	NA NA
Weights in anticipated range and not targeted		
All additional test requirements performed, documented, and uploaded to TALS		
Correctly (e.g. final amount, initial amount, turbidity, and Cl Check)	-	
The pH is transcribed correctly in TALS	NA	VA
All additional information transcribed into TALS is correct and raw data is attached		
Comments are transcribed correctly in TALS		
The state of the s		U
Descript W.I.	1 st Level	2 nd Level
Reagents Tab All necessary reagents not expired and entered into TALS	Reviewer	Reviewer
All spike amounts correct and added to necessary samples and QC		1
The amount dollect and added to necessary samples and QC		
Market L. C	1 st Level	2 nd Level
Date and time accurate and entered into TALS correctly	Reviewer	Reviewer
All necessary 'batch information' complete and entered into TALS correctly		V/
Tarries seed y batch information complete and entered into TALS correctly		
1 st Level Reviewer: Date:	7/2	7/17
2 nd Level Reviewer: Date: 7/	22/1-	
Comments:		
	9	



Batch Number: 320-175074

Method Code: 320-3535_PFC-320

Aqueous Extraction Analysis Sheet

(To Accompany Samples to Instruments)

Analyst: Santos, Jonathan

DB 7/25/17

Batch Open: 7/20/2017 9:14:00AM

Batch End: 7/24/2017 10:05:00PM

Solid-Phase Extraction (SPE)

	Input Sample Lab ID (Analytical Method)	SDG (Job #)	1	InitAmnt FinAmnt	Rcvd	PHs Adj1	Adj2	Due Date	Analytical TAT	Dlv Rank	Comments	Output Sample Lab ID
1	MB~320-175074/1 N/A	N/A		250.00 mL				N/A	N/A	N/A		
L	100 000 1950			0.50 mL								10001 M B 320-175074/1-AIIII
2	LCS~320-175074/2 N/A	N/A		250.00 mL				N/A	N/A	N/A		
-	LCSD~320-175074/3			0.50 mL			<u>.</u>	<u> </u>				17 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
3	N/A	N/A		250.00 mL				N/A	N/A	N/A	RIV	
ļ	U			0.50 mL		<u>. </u>						324-1/54/4/3-AIII
Taye 10/0	160-23181-A-3 (PFC_IDA)	N/A (160-23181-1)	283.50 g	256.6 mL				7/25/17	12_Days	4		A FARIUM IN THE THE INTERIOR OF THE PROPERTY O
6	100 00101		26.92 g	0.50 mL								isai i u i z 3 8 î - A - 3 - Almai
	160-23181-A-4 (PFC_IDA)	N/A (160-23181-1)	272.22 g	245 mL				7/25/17	12_Days	4		
ŧ		_	27.19 g	0.50 mL								1 0 - 2 3 1 8 1 - A - 4 - AIIIB
}	160-23181-A-5 (PFC_IDA)	N/A (160-23181-1)	270.14 g	243.1 mL				7/25/17	12_Days	4		A the internal intern
			27.05 g	0.50 mL	1							пиять 16 - 2 3 1 8 1 - A - 5 - A Inga
.	160-23181-A-6 (PFC_IDA)	N/A (160-23181-1)	285.31 g	257.1 mL				7/25/17	12_Days	4		
L			28.23 g	0.50 mL	1		İ				Car	7/5/17
	320-29732-A-1 (PFC_IDA_DOD5)	N/A (320-29732-1)	284.68 g	258 mL				7/23/17	16_Days	4	Coond D	AND IN THE REPORT OF THE REPORT OF THE PARTY
ļ	200 00700		26.67 g	0.50 mL	<u></u>						Dréb -	pun
	320-29732-A-2 (PFC_IDA_DOD5)	N/A (320-29732-1)	279.04 g	252 mL				7/23/17	16_Days	4	200	FOR THE STATE OF MAIN WAS AND AND AND AND AND AND AND AND AND AND
ļ	220 20720 4 0		27.01 g	0.50 mL			<u></u>				3125	
ĺ	320-29732-A-3 (PFC_IDA_DOD5)	N/A (320-29732-1)	281.97 g	254.6 mL				7/23/17	16_Days	4		Marining in Addied with the safe M
			27.36 g	0.50 mL								Ψ

Printed 7/24/2017

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(To Accompany Samples to Instruments)

Batch Number: 320-175074

Method Code: 320-3535_PFC-320

Analyst: Santos, Jonathan

Batch Open: 7/20/2017 9:14:00AM

Batch End:

Г	320-29713-A-4	Dalat Oak ala Bi		, , , , , , , , , , , , , , , , , , , 							
1	320-29/13-A-4 (PFC_IDA)	Saint Gobain-Pipe Cleaning Activities	282.89 g	255.9 mL			7/25/17	12_Days	2	50x	A shin hali wantu in in in in in in in in in in in in in
Ĺ			27.02 g	0.50 mL						J - /\	
2	320-29713-A-5 (PFC_IDA)	Saint Gobain-Pipe Cleaning Activities	285.74 g	259.2 mL			7/25/17	12_Days	2	RI	JUJA TA TA SA SA SA SA SA SA SA SA SA SA SA SA SA
- 1			26.51 g	0.50 mL						 	1MW 3 2 9 - 2 9 7 1 3 - A - 5 - AIMR
3	480-120783-A-1 (PFC_IDA)	N/A (480-120783-1)	292.28 g	264.1 mL			7/31/17	16_Days	4		Mistigania interioral de la composición del composición de la composición de la composición de la composición de la composición de la composición de la composición de la composición de la composición de la composición de la composición de la composición de la composición de la composición de la composición de la composición de la composición de la composición de la comp
			28.18 g	0.50 mL							1880 4 5 6 - 1 2 8 7 8 3 - A - 1 - A 1880
4	480-120783-A-2 (PFC_IDA)	N/A (480-120783-1)	280.85 g	254.4 mL			7/31/17	16_Days	4		THURNER PROPERTY.
			26.49 g	0.50 mL							M 4 8 9 - 1 2 0 7 8 3 - A - 2 - A
5	480-120783-A-3 (PFC_IDA)	N/A (480-120783-1)	288.45 g	260.2 mL			7/31/17	16_Days	4		This in in the later of the second second
ŀ	U N		28.29 g	0.50 mL							14 8 8 - 1 2 8 7 8 3 - A - 3 - ATRI
6	480-120783-A-4	N/A (480-120783-1)	287.11 g	259.8 mL			7/31/17	16_Days	4		Zilutani i kikin kirini mirita i mirita
F	(PFC_IDA)		27.33 g	0.50 mL							IMM 4 8 0 - 1 2 0 7 8 3 - A - 4 - ATIM
7	480-120783-A-5 (PFC_IDA)	N/A (480-120783-1)	286.18 g	259.4 mL			7/31/17	16_Days	4		
ŀ	(FFC_IDA)		26.78 g	0.50 mL		1					1988 4 8 9 - 1 2 8 7 8 3 - A - 5 - AINN
8	480-120783-A-6 (PFC_IDA)	N/A (480-120783-1)	280.18 g	253.4 mL			7/31/17	16_Days	4	<u> </u>	TRANSPORTATION OF STREET
			26.82 g	0.50 mL	ľ					1	1041 - 0 0 - 1 2 0 1 0 3 - A - 0 - A1881
19	480-120783-A-7 (PFC_IDA)	N/A (480-120783-1)	281.71 g	254.3 mL			7/31/17	16_Days	4		Linkininininininininininini
			27.43 g	0.50 mL							11011 4 0 V - 1 2 V 1 5 - A - 7 - A 1001
20	320-29814-A-3 (PFC_IDA)	N/A (320-29814-1)	271.19 g	243.6 mL			8/9/17	20_Days	2		
			27.55 g	0.50 mL		1 1					14m 2 2 8 - 2 - 4 - 3 - 4 mml
21	320-29715-A-1 (PFC_IDA)	N/A (320-29715-1)	278.56 g	251.6 mL			7/31/17	16_Days	2		Effilikimiliki juli iliki juli kuli liki ili
			26.94 g	0.50 mL		-					1980 3 2 8 - 2 8 7 1 5 - A - 1 - AIIII
22	320-29715-A-2 (PFC_IDA)	N/A (320-29715-1)	282.02 g	255.2 mL			7/31/17	16_Days	2		
			26.87 g	0.50 mL							1111 3 2 0 - 2 9 7 1 5 - A - 2 - A 1991

(To Accompany Samples to Instruments)

Batch Number: 320-175074

Analyst: Santos, Jonathan

Batch Open: 7/20/2017 9:14:00AM

Batch End:

Method Code: 320-3535_PFC-320

320-29715-A-3 (PFC_IDA)	N/A (320-29715-1)	280.16 g	252.1 mL		7/31/17	16_Days	2	
	<u> </u>	28.05 g	0.50 mL					2 9 - 2 9 7 1 3 - A - 3 - AIRE

Page 1078 of 1104

Printed: 7/20/2017

(To Accompany Samples to Instruments)

Batch Number: 320-175074

Method Code: 320-3535_PFC-320

Analyst: Santos, Jonathan

Batch Open: 7/20/2017 9:14:00AM

Batch End:

		Batch Notes
	Manifold ID	2, 8
	Methanol ID	983105
	Hexane ID	
	Sodium Hydroxide ID	988541
	First Start time	NA
	First End time	NA
Į D	SPE Cartridge Type	WAX 500mg
Page 1079 of 1104	Solid Phase Extraction Disk ID	003036333A
079	Balance ID	QA-070
of 1	H2O ID	7/17/17
104	Pipette ID	N32728F
	Solvent Name	0.3% NH4OH/MeOH
	Solvent Lot #	987338
	Analyst ID - Reagent Drop	HTA
	Analyst ID - SU Reagent Drop	HJA
	Analyst ID - SU Reagent Drop Witness	JNS
	Acid Name	
	Acid ID	NA
	Reagent ID	NA
	Reagent Lot Number	NA
	SOP Number	WS-LC-0025

Batch Number: 320-175074

Method Code: 320-3535_PFC-320

Aqueous Extraction Analysis Sheet

(To Accompany Samples to Instruments)

Analyst: Santos, Jonathan

Batch Open: 7/20/2017 9:14:00AM

Batch End:

Batch Comment		
	Comments	
Login Comments for Job 1	120783: L4Reviewed(Bflo)n/a - all sub only.	

(To Accompany Samples to Instruments)

Analyst: Santos, Jonathan

Batch Number: 320-175074

Method Code: 320-3535_PFC-320

Batch Open: 7/20/2017 9:14:00AM

Batch End:

Reagent Additions Worksheet

Lab ID	Reagent Code	Amount Added	Final Amount	Ву	Witness
MB 320-175074/1	LCMPFCSU_00081	500 uL	0.50 mL	H34 7-20-17	
LCS 320-175074/2	LCMPFCSU_00081	500 uL	0.50 mL	1	Jus 7/20/A
LCS 320-175074/2	LCPFCSP_00100	500 uL	0.50 mL		
CSD 320-175074/3	LCMPFCSU_00081	500 uL	0.50 mL		
CSD 320-175074/3	LCPFCSP_00100	500 uL	0.50 mL		
160-23181-A-3	LCMPFCSU_00081	500 uL	0.50 mL		
160-23181-A-4	LCMPFCSU_00081	500 uL	0.50 mL		
160-23181-A-5	LCMPFCSU_00081	500 uL	0.50 mL		
160-23181-A-6	LCMPFCSU_00081	500 uL	0.50 mL		
320-29732-A-1	LCMPFCSU_00081	500 uL	0.50 mL		
320-29732-A-2	LCMPFCSU_00081	500 uL	0.50 mL		
320-29732-A-3	LCMPFCSU_00081	500 uL	0.50 mL		
320-29713-A-4	LCMPFCSU_00081	500 uL	0.50 mL		
320-29713-A-5	LCMPFCSU_00081	500 uL	0.50 mL		
480-120783-A-1	LCMPFCSU_00081	500 uL	0.50 mL		
480-120783-A-2	LCMPFCSU_00081	500 uL	0.50 mL		
480-120783-A-3	LCMPFCSU_00081	500 uL	0.50 mL		
480-120783-A-4	LCMPFCSU_00081	500 uL	0.50 mL		+

(To Accompany Samples to Instruments)

Batch Number: 320-175074

Analyst: Santos, Jonathan

Method Code: 320-3535_PFC-320

Batch Open: 7/20/2017 9:14:00AM

Batch End:

					2410	II EIIQ.	
480-120783-A-5	LCMPFCSU_00081	500 uL	0.50 mL	HZA	7-20-17	The Zholi	<u> </u>
480-120783-A-6	LCMPFCSU_00081	500 uL	0.50 mL		1	1	17
480-120783-A-7	LCMPFCSU_00081	500 uL	0.50 mL		 	+	
320-29814-A-3	LCMPFCSU_00081	500 uL	0.50 mL		 	 	
320-29715-A-1	LCMPFCSU_00081	500 uL	0.50 mL		 	 	
320-29715-A-2	LCMPFCSU_00081	500 uL	0.50 mL			+	-
320-29715-A-3	LCMPFCSU_00081	500 uL	0.50 mL		+	 	

T age	Other Reagents:	
Reagent	Amount/Units	Lot#:
\$ \$		
Ī		

Printed: 7/20/2017



Sacramento Preparation Data Review Checklist

Preparation Batch Number(s): 75079 Test: PFC (W))	
Earliest Holding Time:	<u></u>	
		No.
Sample List Tab	1 st Level	2 nd Level
Samples identified to the correct method	Reviewer	Reviewer
All necessary NCMs filed (including holding time)	+	-
Method/sample/login/QAS checked and correct	 	
8 8	101	
	1 st Level	2 nd Level
All samples properly preserved	Reviewer	Reviewer
Weights in anticipated range and not targeted	11/2	NA
All additional test requirements performed, documented, and uploaded to TALS correctly (e.g. final amount, initial amount, turbidity, and Cl Check)		
The pH is transcribed correctly in TALS	N M-	- A - A
All additional information transcribed into TALS is correct and rew data is	INP	NA
attached		
Comments are transcribed correctly in TALS		
	1 st Level	2 nd Level
Reagents Tab	Reviewer	2 Level Revjewer
All necessary reagents not expired and entered into TALS	100000	TOVIEWEL
All spike amounts correct and added to necessary samples and QC		
	1 st Level	2 nd Level
Batch Information		Reviewer
Date and time accurate and entered into TALS correctly	/ /	THE VIEWE
All necessary 'batch information' complete and entered into TALS correctly		-/-
1 st Level Reviewer:	1251	
2 nd Level Reviewer:	1,00 - 1,1 -	
.Comments:	125/1	<u>' </u>

AB 7/23/17

(To Accompany Samples to Instruments)

Batch Number: 320-172514

Analyst: Arauz, Horacio J

Method Code: 320-Shake_Bath_14D-320

Batch Open: 7/5/2017 1:07:00PM

Batch End: 7/22/2017 9:00:00AM

Shake Extraction with Ultrasonic Bath Extraction

1		(Job #)	Amount	Amount	Due Date	Analytical TAT	Dlv Rank	Comments	Output Sample Lab ID
L	MB~320-172514/1 N/A	N/A	5.00 g	1.00 mL	N/A	N/A	N/A		
2	LCS~320-172514/2 N/A	N/A	5.00 g	1.00 mL	N/A	N/A	N/A		
3	320-29543-A-62 (PFC_IDA_DOD5)	N/A (320-29543-1)	5.07 g	1.00 mL	7/6/17	8_Days	4		
4	320-29543-A-64 (PFC_IDA_DOD5)	N/A (320-29543-1)	5.07 g	1.00 mL	7/6/17	8_Days	4		
age 1	320-29543-A-65 (PFC_IDA <u>.</u> DOD5)	N/A (320-29543-1)	5.07 g	1.00 mL	7/6/17	8_Days	4		
1084 df	320-29543-A-66 (PFC_IDA [®] _DOD5)	N/A (320-29543-1)	5.11 g	1.00 mL	7/6/17	8_Days	4		
7	320-29543-A-68 (PFC_IDA_DOD5)	N/A (320-29543-1)	5.09 g	1.00 mL	7/6/17	8_Days	4	RI UDA 98c	
8	320-29543-A-69 (PFC_IDA_DOD5)	N/A (320-29543-1)	5.11 g	1.00 mL	7/6/17	8_Days	4		
9	320-29543-A-70 (PFC_IDA_DOD5)	N/A (320-29543-1)	5.04 g	1.00 mL	7/6/17	8_Days	4		
10	320-29543-A-71 (PFC_IDA_DOD5)	N/A (320-29543-1)	5.06 g	1.00 mL	7/6/17	8_Days	4		
11	320-29543-A-71~MS (PFC_IDA_DOD5)	N/A (320-29543-1)	5.11 g	1.00 mL	7/6/17	8_Days	4		
12	320-29543-A-71~MSD (PFC_IDA_DOD5)	N/A (320-29543-1)	5.08 g	1.00 mL	7/6/17	8_Days	4		
13	320-29543-A-72 (PFC_IDA_DOD5)	N/A (320-29543-1)	5.08 g	1.00 mL	7/6/17	8_Days	4		
14	320-29543-A-73 (PFC_IDA_DOD5)	N/A (320-29543-1)	5.05 g	1.00 mL	7/6/17	8_Days	4		
15	320-29543-A-74 (PFC_IDA_DOD5)	N/A (320-29543-1)	5.08 g	1.00 mL	7/6/17	8_Days	4		3 2 8 - 2 9 5 4 3 - A - 7 4 - A

(To Accompany Samples to Instruments)

Batch Number: 320-172514 Analyst: Arauz, Horacio J Batch Open: 7/5/2017 1:07:00PM

Method Code: 320-Shake_Bath_14D-320 Batch End: 7/22/2017 9:00:00AM

16	320-29543-A-75 (PFC_IDA_DOD5)	N/A (320-29543-1)	5.03 g	1.00 mL	7/6/17	8_Days	4	Molatinik kuta inikuk kuta inikuta
17	320-29543-A-76 (PFC_IDA_DOD5)	N/A (320-29543-1)	5.06 g	1.00 mL	7/6/17	8_Days	4	
18	320-29543-A-77 (PFC_IDA_DOD5)	N/A (320-29543-1)	5.09 g	1.00 mL	7/6/17	8_Days	4	Wall for the first of the first

	Batch Notes
Balance ID	QA-070
Blank Sand Lot #	162639
Filter ID	NA
Filter ID Millipore Water Dispense Date Analyst ID - Reagent Drop Witness	07/10/17
Analyst ID - Reagent Drop Witness	NSH
SPE Cartridge ID	017037054A
SPE Cartridge Type	WAX 150mg
Hexane ID	958902
Methanol ID	973180
Ammonium Hydroxide/MeOH ID	987338
Sodium Hydroxide ID	977629
Methanolic Potassium Hydroxide ID	968358
Manifold ID	11,8
Interference check solution ID	NA
Acetic Acid ID	429065
Batch Comment	Spike bottle # 4; add on #2 Pipette HD05108

Printed: 7/22/2017

(To Accompany Samples to Instruments)

Batch Number: 320-172514 Analyst: Arauz, Horacio J Batch Open: 7/5/2017 1:07:00PM

Method Code: 320-Shake_Bath_14D-320 Batch End:

16	320-29543-A-75 (PFC_IDA_DOD5)	N/A (320-29543-1)	5.03 g	1.00 mL	7/6/17	8_Days	4	
17	320-29543-A-76 (PFC_IDA_DOD5)	N/A (320-29543-1)	5.06 g	1.00 mL	7/6/17	8_Days	4	
18	320-29543-A-77 (PFC_IDA_DOD5)	N/A (320-29543-1)	5.09 g	1.00 mL	7/6/17	8_Days	4	Wall Trib Filt Trib Trib Trib Trib Trib Trib Trib Trib

	Batch Notes
Balance ID	QA-070
Blank Sand Lot #	162639
Filter ID	NA
Millipore Water Dispense Date	7/10/17
Analyst ID - Reagent Drop Witness	NSH
SPE Cartridge ID	
SPE Cartridge Type	WAX 150mg
Hexane ID	958902
Methanol iD	973180
Ammonium Hydroxide/MeOH ID	987338
Sodium Hydroxide ID	
Methanolic Potassium Hydroxide ID	
Manifold ID	11,28
Interference check solution ID	NA
Acetic Acid ID	429065
Batch Comment	Spike bottle # 4; add on #2 Pipette HD05108

(To Accompany Samples to Instruments)

Batch Number: 320-172514

Analyst: Arauz, Horacio J

Method Code: 320-Shake_Bath_14D-320

Batch Open: 7/5/2017 1:07:00PM

Batch End:

		Comments
	320-29543-A-62	Mathed Commontes, include add as asiling
	320-29543-A-64	Method Comments: include add on spikes
	320-29543-A-65	Method Comments: include add on spikes
	320-29543-A-66	Method Comments: include add on spikes
	320-29543-A-68	Method Comments: include add on spikes
J	320-29543-A-69	Method Comments: include add on spikes
<u>age 7</u>	320-29543-A-70	Method Comments: include add on spikes
Page 1087 of 1104	320-29543-A-71	Method Comments: include add on spikes
# 1	320-29543-A-71~MS	Method Comments: include add on spikes
#	320-29543-A-71~MSD	Method Comments: include add on spikes
		Method Comments: include add on spikes
	320-29543-A-72	Method Comments: include add on spikes
	320-29543-A-73	Method Comments: include add on spikes
	320-29543-A-74	Method Comments: include add on spikes
	320-29543-A-75	Method Comments: include add on spikes
	320-29543-A-76	Method Comments: include add on spikes
	320-29543-A-77	Method Comments: include add on spikes

(To Accompany Samples to Instruments)

Batch Number: 320-172514 Analyst: Arauz, Horacio J Batch Open: 7/5/2017 1:07:00PM

Method Code: 320-Shake_Bath_14D-320 Batch End:

Reagent Additions Worksheet

	Lab ID	Reagent Code	Amount Added	Final Amount	Ву	Witness
	MB 320-172514/1	LCMPFC2SU_00023	1.00 mL	1.00 mL	HZA 7.5-17	NSH 7-5-17
	MB 320-172514/1	LCMPFCSU_00079	1000 uL	1.00 mL		1
	LCS 320-172514/2	LCMPFC2SU_00023	1.00 mL	1.00 mL		
	LCS 320-172514/2	LCMPFCSU_00079	1000 uL	1.00 mL		
	LCS 320-172514/2	LCPFC2SP_00033	1.00 mL	1.00 mL		
Page	LCS 320-172514/2	LCPFCSP_00095	1.00 mL	1.00 mL		
108	320-29543-A-62	LCMPFC2SU_00023	1.00 mL	1.00 mL		
Page 1088 of 1104	320-29543-A-62	LCMPFCSU_00079	1000 uL	1.00 mL		
1104	320-29543-A-64	LCMPFC2SU_00023	1.00 mL	1.00 mL		
	320-29543-A-64	LCMPFCSU_00079	1000 uL	1.00 mL		
	320-29543-A-65	LCMPFC2SU_00023	1.00 mL	1.00 mL		
	320-29543-A-65	LCMPFCSU_00079	1000 uL	1.00 mL		
	320-29543-A-66	LCMPFC2SU_00023	1.00 mL	1.00 mL		
	320-29543-A-66	LCMPFCSU_00079	1000 uL	1.00 mL		
	320-29543-A-68	LCMPFC2SU_00023	1.00 mL	1.00 mL		
	320-29543-A-68	LCMPFCSU_00079	1000 uL	1.00 mL		
	320-29543-A-69	LCMPFC2SU_00023	1.00 mL	1.00 mL		
	320-29543-A-69	LCMPFCSU_00079	1000 uL	1.00 mL	7	

(To Accompany Samples to Instruments)

Batch Number: 320-172514 Analyst: Arauz, Horacio J Batch Open: 7/5/2017 1:07:00PM

Method Code: 320-Shake_Bath_14D-320 Batch End:

			<u></u>		=
320-29543-A-70	LCMPFC2SU_00023	1.00 mL	1.00 mL	HSA 7-5-17	NSH 7-5-17
320-29543-A-70	LCMPFCSU_00079	1000 uL	1.00 mL	1	
320-29543-A-71	LCMPFC2SU_00023	1.00 mL	1.00 mL		
320-29543-A-71	LCMPFCSU_00079	1000 uL	1.00 mL		
320-29543-A-71 MS	LCMPFC2SU_00023	1.00 mL	1.00 mL		
320-29543-A-71 MS	LCMPFCSU_00079	1000 uL	1.00 mL		
320-29543-A-71 MS	LCPFC2SP_00033	1.00 mL	1.00 mL		
320-29543-A-71 MS	LCPFCSP_00095	1.00 mL	1.00 mL		
320-29543-A-71 MSD	LCMPFC2SU_00023	1.00 mL	1.00 mL		
320-29543-A-71 MSD	LCMPFCSU_00079	1000 uL	1.00 mL		
320-29543-A-71 MSD	LCPFC2SP_00033	1.00 mL	1.00 mL		
320-29543-A-71 MSD	LCPFCSP_00095	1.00 mL	1.00 mL		
320-29543-A-72	LCMPFC2SU_00023	1.00 mL	1.00 mL		
320-29543-A-72	LCMPFCSU_00079	1000 uL	1.00 mL		
320-29543-A-73	LCMPFC2SU_00023	1.00 mL	1.00 mL		
320-29543-A-73	LCMPFCSU_00079	1000 uL	1.00 mL		
320-29543-A-74	LCMPFC2SU_00023	1.00 mL	1.00 mL		
320-29543-A-74	LCMPFCSU_00079	1000 uL	1.00 mL		
320-29543-A-75	LCMPFC2SU_00023	1.00 mL	1.00 mL		
320-29543-A-75	LCMPFCSU_00079	1000 uL	1.00 mL		
320-29543-A-76	LCMPFC2SU_00023	1.00 mL	1.00 mL	1	4_

Printed: 7/5/2017

(To Accompany Samples to Instruments)

Batch Number: 320-172514

Analyst: Arauz, Horacio J

Batch Open: 7/5/2017 1:07:00PM

Method Code: 320-Shake_Bath_14D-320

Batch End:

320-29543-A-76	LCMPFCSU_00079	1000 uL	1.00 mL	H30 7.5-17	
320-29543-A-77	LCMPFC2SU_00023	1.00 mL	1.00 mL		
320-29543-A-77	LCMPFCSU_00079	1000 uL	1.00 mL	V	

	Other Reagents:	
Reagent	Amount/Units	Lot#:

Printed: 7/5/2017



Sacramento Preparation Data Review Checklist

reparation batch Number(s): \$20-172-517 Test: P1C-5		
Earliest Holding Time: 7-5-17-		
	1 st Level	2 nd Leve
Sample List Tab	Reviewer	Reviewe
Samples identified to the correct method	-	1.00.00.0
All necessary NCMs filed (including holding time)	NV	MA
Method/sample/login/QAS checked and correct	\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\	
	1 st Level	2 nd Level
Worksheet Tab	Reviewer	Reviewer
All samples properly preserved		MA
Weights in anticipated range and not targeted	NA	10//-(
All additional test requirements performed, documented, and uploaded to TALS	-	
correctly (e.g. final amount, initial amount, turbidity, and Cl Check)		
The pH is transcribed correctly in TALS	NV	ΛΙΔ
All additional information transcribed into TALS is correct and raw data is	7	13/
attached		
Comments are transcribed correctly in TALS		
	1 st Level	2 nd Level
Reagents Tab	Reviewer	Reviewer
All necessary reagents not expired and entered into TALS		
All spike amounts correct and added to necessary samples and QC		/
	1 st Level	2 nd Level
Batch Information	Reviewer	Reviewer
Date and time accurate and entered into TALS correctly		7101101101
All necessary 'batch information' complete and entered into TALS correctly		
1 st Level Reviewer: VPM Date:	1/22/	17
	11001	
2 nd Level Reviewer:	7/22	117
Comments:	דעיווי	



Test America – Sacramento

Sample Dilution Record

Method ID P	-C-DOD		Job #	19732									
Method ID PFC-DDD Job# 29732 Analyst (Print Name) Suphers Chandrasma Analyst Initials &&C													
Date 7/27/17													
Sample#	Original F.V.	Aliquot (uL)	Dilution F.V.	Dilution Factor									
1		40	400	10									

Comments:			
		 	
	·	 	



West Sacramento

HPLC/LCMS Data Review Checklist

Job Number(s): 480-121451 , 320-29732	Work List ID(s):4	5994			
Extraction Batch: 175742	Analysis Batch(es):		176487		
Delivery Rank 4	Due Date: <u>8-2-1</u>	7			8
A Calibration/Instrument Run QC		1 st Level	2 nd Level	N/A	1
1. ICAL locked in Chrom and TALS? ICAL Batch# 1754	177 ,175476	V.			1
2. ICAL, CCV Frequency & Criteria met.		V			1
 RF_{average} criteria appropriate for the method. 					1
 Linear Regression criteria appropriate if required 	(r ≥ 0.995).	-			1
 Quadratic fit criteria appropriate if required (r² > 0. 	.990).				1
 For Linear Regression and Quadratic fit – Does the ½ the reporting limit as described in CA-Q-S-0053 	ne y-intercept support	V	/		1
 All curve points show calculated concentrations. 					1
3. Peaks correctly ID'd by data system.	-				1
5. Tune check frequency & criteria met and Tune check re	eport attached.				1
B. QA/QC					1
Are all QC samples properly linked in TALS?		-			0,7
2. Method blank, LCS/LCSD and MS/SD frequencies met					JRB 7-28-17
3. LCS/LCSD and MB data are within control limits. If not					1-28-11
4. Are MS/MSD recoveries and RPD within control limits?					1
5. Holding Times were met for prep and analytical.		V	/		1
6. IS/Surrogate recoveries meet criteria or properly noted	. NCM				1
C. Sample Analysis					1
1. Was correct analysis performed and were project instru	actions followed?	V			1
2. If required, are compounds within RT windows?					1
3. If required, are positive hits confirmed and >40% RPD	flagged?				1
4. Manual Integrations reviewed and appropriate.					1
5. All analytes correctly reported. (Primary, secondary, ac		V			1
Correct reporting limits used. (based on client request, dilutions)		/			
D Documentation 95	778.95781				1
 Are all non-conformances documented/attached? NCM 	1# 95774, 95776				1
2. Do results make sense (e.g. dilutions, etc.)?					
3. Have all flags been reviewed for appropriateness?					
4. For level 3 and 4 reports, have forms and raw data bee	en reviewed?		1)		
5. Was QC Checker run for this job?					
*Upon completion of this checklist, the reviewer must scan			S job.		_
1 st Level (Analyst):	Date: 7	28-11			

2nd Level Reviewer:

Report Date: 28-Jul-2017 09:55:04

Chrom Revision: 2.2 20-Jun-2017 07:42:36

Page: 1

TestAmerica Laboratories Worklist QC Batch Report

Worklist Name:

27JUL2017E_PFC

Worklist Number: 45994

Instrument Name: A8_N

A8_N Chrom Method: A8_N \\ChromNa\Sacramento\ChromData\A8_N\20170728-45994.b

Data Directory: QC Batching:

Disabled

Limit Group Batching: Enabled

QC Batch: 1	LC PFC_DOD ICAL	LC PFC ICAL	LC PFAS ICAL
1	Raw Batch 176487	Raw Batch 176488	Raw Batch 176489
#1 CCV L4	#1 CCV L4	#1 CCV L4	
# 2 MB 320-175742/1-A	# 2 MB 320-175742/1-A	# 2 MB 320-175742/1-A	
# 3 LCS 320-175742/2-A	# 3 LCS 320-175742/2-A	# 3 LCS 320-175742/2-A	
# 4 LCSD 320-175742/3-A	# 4 LCSD 320-175742/3-A	# 4 LCSD 320-175742/3-A	
# 5 480-121451-C-1-A		# 5 480-121451-C-1-A	# 5 480-121451-C-1-A
# 6 480-121451-C-2-A		# 6 480-121451-C-2-A	# 6 480-121451-C-2-A
# 7 480-121451-C-4-A		# 7 480-121451-C-4-A	# 7 480-121451-C-4-A
# 8 480-121451-C-5-A		# 8 480-121451-C-5-A	# 8 480-121451-C-5-A
# 9 480-121451-C-7-A		# 9 480-121451-C-7-A	# 9 480-121451-C-7-A
#10 480-121451-A-16-A		#10 480-121451-A-16-A	#10 480-121451-A-16-A
#11 480-121451-A-17-A		#11 480-121451-A-17-A	#11 480-121451-A-17-A
#12 CCV L5	#12 CCV L5	#12 CCV L5	
#13 480-121451-A-18-A		#13 480-121451-A-18-A	#13 480-121451-A-18-A
#14 320-29732-C-4-A	#14 320-29732-C-4-A		
#15 CCV L4	#15 CCV L4	#15 CCV L4	

64

Batch Number: 320-175742

Method Code: 320-3535_PFC-320

Aqueous Extraction Analysis Sheet

(To Accompany Samples to Instruments)

Analyst: Santos, Jonathan

A8 7/27/17

Batch Open: 7/25/2017 9:11:00AM

Batch End: 7/27/2017 2:07:00PM

Solid-Phase Extraction (SPE)

i	Input Sample Lab ID (Analytical Method)	SDG (Job #)	GrossWt TareWt	InitAmnt FinAmnt	Rcvd	PHs Adj1	Adj2	Due Date	Analytical TAT	Dlv Rank	Comments	Output Sample Lab ID
1	MB~320-175742/1 N/A	N/A		250.00 mL				N/A	N/A	N/A		
	LCS~320-175742/2	N/A		0.50 mL								
2	N/A	1471		250.00 mL				N/A	N/A	N/A		
- }	LCSD~320-175742/3	N/A		0.50 mL								
3	N/A	INIA		250.00 mL				N/A	N/A	N/A		
a	480-121451-C-1	SUA		0.50 mL			L.,					2 0 0 5 2 6 5 1 7 5 7 4 2 1 3 - A10III
age it	(PEC IDA) I	N/A (480-121451-1)	291.97 g	265.1 mL				8/2/17	8_Days	4		
<u> </u>			26.86 g	0.50 mL								***** 4 8 9 - 1 2 1 4 5 1 - C - 1 - ATIII
5 9	480-121451-C-2 (PFC_IDA)	N/A (480-121451-1)	288.67 g	262.1 mL				8/2/17	8_Days	4		
† 4			26.62 g	0.50 mL								IIII 4 8 9 - 1 2 1 4 5 1 - C - 2 - A IIII
6	480-121451-C-4 (PFC_IDA)	N/A (480-121451-1)	288.46 g	262.3 mL				8/2/17	8_Days	4		
			26.21 g	0.50 mL								118 4 8 6 - 1 2 1 4 5 1 - C - 4 - A H
7	480-121451-C-5 (PFC_IDA)	N/A		257.1 mL				8/2/17	8_Days	4		
			26.67 g	0.50 mL								4 8 0 - 1 2 1 4 5 1 - C - 5 - A
8	480-121451-C-7 (PFC_IDA)	N/A (480-121451-1)	276.24 g	249.1 mL				8/2/17	8_Days	4		Ministration of the femile and the f
			27.16 g	0.50 mL								4 8 6 - 1 2 1 4 5 1 - C - 7 - AIII
9	480-121451-A-16 (PFC_IDA)	N/A (480-121451-1)	285.33 g	258.6 mL				8/2/17	8_Days	4		
			26.77 g	0.50 mL		i				,		4 8 0 - 1 2 1 4 5 1 - A - 1 6 - A - 1
٥	480-121451-A-17 (PFC_IDA)	N/A		267.3 mL			•	8/2/17	8_Days	4	<u></u>	E NATUTATION DE LA COMPANION DE LA COMPANION DE LA COMPANION DE LA COMPANION DE LA COMPANION DE LA COMPANION DE
		,	27.19 g	0.50 mL								

Printed: 7/27/2017

Page 1 of 6

TestAmerica Sacramento

(To Accompany Samples to Instruments)

Batch Number: 320-175742

Method Code: 320-3535_PFC-320

Analyst: Santos, Jonathan

Batch Open: 7/25/2017 9:11:00AM

Batch End:

11	480-121451-A-18 (PFC_IDA)	N/A (480-121451-1)	289.96 g	263.1 mL		8/2/17	8_Days	4	
			26.90 g	0.50 mL					1 mm 4 D D - 1 2 1 4 0 1 - M - 1 0 - M mm
12	320-29732-C-4 (PFC_IDA_DOD5)	N/A (320-29732-1)	272.84 g	245.5 mL		7/23/17	16_Days	4	Priblidiu in in in in in in in in in in in in in
Į			27.30 g	0.50 mL					

Printed: 7/25/2017

(To Accompany Samples to Instruments)

Batch Number: 320-175742

Method Code: 320-3535_PFC-320

Analyst: Santos, Jonathan

Batch Open: 7/25/2017 9:11:00AM

Batch End:

	Batch Notes
Manifold ID	2, 8
Methanol ID	988835
Hexane ID	981625
Sodium Hydroxide ID	988541
First Start time	NA
First End time	NA
SPE Cartridge Type	WAX 500mg
Solid Phase Extraction Disk ID Balance ID H2O ID Pipette ID	003237040A
Balance ID	QA-070
H2O ID	7/21/17
Pipette ID	MD05306
Solvent Name	0.3% NH4OH/MeOH
Solvent Lot #	
Analyst ID - Reagent Drop	
Analyst ID - SU Reagent Drop	
Analyst ID - SU Reagent Drop Witness	JNS
Acid Name	NA
Acid ID	NA
Reagent ID	NA
Reagent Lot Number	NA
SOP Number	WS-LC-0025

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Aqueous Extraction Analysis Sheet

(To Accompany Samples to Instruments)

Analyst: Santos, Jonathan

Batch Open: 7/25/2017 9:11:00AM

Batch End:

Batch Comment NA

Comments

Login Comments for Job 121451: L4Reviewed(Bflo):

~Sub methods:8270D_SIM,PFC_IDA.~

320-29732-C-4

Batch Number: 320-175742

Method Code: 320-3535_PFC-320

Rework Comments: Extremely low FOSA IDA

Printed: 7/25/2017

(To Accompany Samples to Instruments)

Analyst: Santos, Jonathan

Batch Open: 7/25/2017 9:11:00AM

Batch End:

Reagent Additions Worksheet

	Lab ID	Reagent Code	Amount Added	Final Amount	Ву	Witness
	MB 320-175742/1	LCMPFC_ALL_SU_00004	500 uL	0.50 mL	rol 7-25-17	JNS 712617
	LCS 320-175742/2	LCMPFC_ALL_SU_00004	500 uL	0.50 mL		1
	LCS 320-175742/2	LCPFCSP_00110	500 uL	0.50 mL		
	LCSD 320-175742/3	LCMPFC_ALL_SU_00004	500 uL	0.50 mL		
	LCSD 320-175742/3	LCPFCSP_00110	500 uL	0.50 mL		
ם ב	480-121451-C-1	LCMPFC_ALL_SU_00004	500 uL	0.50 mL		
	480-121451-C-2	LCMPFC_ALL_SU_00004	500 uL	0.50 mL		
9	480-121451-C-4	LCMPFC_ALL_SU_00004	500 uL	0.50 mL		
Page 1099 of 1104	480-121451-C-5	LCMPFC_ALL_SU_00004	500 uL	0.50 mL		
	480-121451-C-7	LCMPFC_ALL_SU_00004	500 uL	0.50 mL		
	480-121451-A-16	LCMPFC_ALL_SU_00004	500 uL	0.50 mL		
	480-121451-A-17	LCMPFC_ALL_SU_00004	500 uL	0.50 mL		
	480-121451-A-18	LCMPFC_ALL_SU_00004	500 uL	0.50 mL		
	320-29732-C-4	LCMPFC_ALL_SU_00004	500 uL	0.50 mL	A	

Batch Number: 320-175742

Method Code: 320-3535_PFC-320

(To Accompany Samples to Instruments)

Analyst: Santos, Jonathan

Batch Open: 7/25/2017 9:11:00AM

Batch End:

Other Reagents:				
Reagent	Amount/Units	Lot#:		

Page 1100 of 1104

Batch Number: 320-175742

Method Code: 320-3535_PFC-320



Sacramento Preparation Data Review Checklist

Preparation Batch Number(s): 1+5+42 Test: 3535-	FC	
Earliest Holding Time: 7/14/17		
		
		1
Sample List Tab	1 st Level	2 nd Leve
Samples identified to the correct method	Reviewer	Reviewe
All necessary NCMs filed (including holding time)	 	1
Method/sample/login/QAS checked and correct		
	481	-nd -
Worksheet Tab	1 st Level Reviewer	2 nd Leve Reviewe
All samples properly preserved	19/A	
Weights in anticipated range and not targeted	177	No
All additional test requirements performed, documented, and uploaded to TALS correctly (e.g. final amount, initial amount, turbidity, and Cl Check)	1	
The pH is transcribed correctly in TALS	JIIA	
All additional information transcribed into TALS is correct and raw data is	NA	nke.
attached		/,
Comments are transcribed correctly in TALS		
	1 st Level	2 nd Level
Reagents Tab	Reviewer	Reviewer
All necessary reagents not expired and entered into TALS	1/	//
All spike amounts correct and added to necessary samples and QC		-
	1 st Level	2 nd Level
Batch information	Reviewer	Reviewer
Date and time accurate and entered into TALS correctly		1
All necessary 'batch information' complete and entered into TALS correctly		
	<u>-</u>	
Level Reviewer: Date:	27/17	-
Pod Level Reviewer: Date: 175	H17	
Comments:	·	

Shipping and Receiving Documents

TestAmerica Sacramento

West Sacramento, CA 95605

Phone: 916.373.5600 Fax:

Chain of Custody Record

198628

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Laboratories, Inc.

Regulatory Program: DW NPDES RCRA Other: TAL-8210 (0713) Project Manager: Jeff Orient COC No: Client Contact Site Contact: Kein Langtage Date: 7/6/17 Company Name: To tra Tech Tel/Fax: 1(412)921-8778 Lab Contact: Duind Allunke Carrier: Fed Ex COCs Address: 601 Ankeson Dr. **Analysis Turnaround Time** Sampler: Vevin Lang tos & PFC, CEMUST - LGMANS City/State/Zip: 7: Holong PA For Lab Use Only: CALENDAR DAYS WORKING DAYS 15220 Phone: 1(412) 911-8778 Walk-in Client: TAT if different from Below Perform MS / MSD (Y / N) Lab Sampling: 2 weeks Project Name: WEZI Branswick PFL Asysse 1 week Site: Former NAS Brussiack GWETS Job / SDG No. 2 days PO# 112608005-WEZI, PT.LT 1 day Sample Type Sample Sample # of Sample Identification Date Time G=Grab) Matrix Cont Sample Specific Notes: TP-PFC-019-TPI W Dan TP-PFC-019-MID-CARBON 0916 W PFC-019-TPE 140 PFC-019 - TPE-D W 1103 of 1104 Preservation Used: 1= Ice, 2= HCI; 3= H2SO4; 4=HNO3; 5=NaOH; 6= Other Sample Disposal (A fee may be assessed if samples are retained longer than 1 month) Possible Hazard Identification: Are any samples from a listed EPA Hazardous Waste? Please List any EPA Waste Codes for the sample in the Comments Section if the lab is to dispose of the sample Disposal by Lab Non-Hazard Archive for Skin Irritant Poison B Unknown Return to Client Flammable Months Special Instructions/QC Requirements & Comments: Cooler Temp. ("C): Obs'd: 5.4 Corr'd: Custody Seal No.: Therm ID No.: A K- 2 Custody Seals Intact: Yes No Company: Received by: 7/7/17 Relinquished by Date/Time: Company 1000 7 Awy 7/6/17 1600 Relinquished by Date/Time: Received by: Date/Time: Company Relinquished by: Company: Date/Time: Received in Laboratory by: Company: Date/Time:

Login Sample Receipt Checklist

Client: Tetra Tech, Inc.

Job Number: 320-29732-1

Login Number: 29732 List Source: TestAmerica Sacramento

List Number: 1

Creator: Hytrek, Cheryl

Question	Answer	Comment
Radioactivity wasn't checked or is = background as measured by a survey meter.</td <td>True</td> <td></td>	True	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	N/A	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	N/A	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

```
"TP-PFC-019-TPI", "537 (Modified)", "DL", "320-29732-1", "TALSAC", "1763-23-1", "Perfluorooctanesulfonic acid
(PFOS)","360","ng/L","D","12","DL","","TRG","","","39","LOQ","YES","-99","","256.3","0.50","29",""
"TP-PFC-019-TPI", "537 (Modified)", "DL", "320-29732-1", "TALSAC", "2058-94-8", "Perfluoroundecanoic acid
(PFUnA)","20","ng/L","U","7.3","DL","","TRG","","","24","LOQ","NO","-99","","256.3","0.50","20",""
"TP-PFC-019-TPI", "537 (Modified)", "DL", "320-29732-1", "TALSAC", "2706-90-3", "Perfluoropentanoic acid
(PFPeA)","190","ng/L","D","9.6","DL","","TRG","","","24","LOQ","NO","-99","","256.3","0.50","20",""
"TP-PFC-019-TPI", "537 (Modified)", "DL", "320-29732-1", "TALSAC", "307-24-4", "Perfluorohexanoic acid
(PFHxA)", "350", "ng/L", "D", "7.7", "DL", "", "TRG", "", "", "24", "LOQ", "NO", "-99", "", "256.3", "0.50", "20", ""
"TP-PFC-019-TPI", "537 (Modified)", "DL", "320-29732-1", "TALSAC", "307-55-1", "Perfluorododecanoic acid
(PFDoA)","20","ng/L","U","5.7","DL","","TRG","","","24","LOQ","NO","-99","","256.3","0.50","20",""
"TP-PFC-019-TPI","537 (Modified)","DL","320-29732-1","TALSAC","335-67-1","Perfluorooctanoic acid (PFOA)","1500","ng/L","D M","7.3","DL","","TRG","","","24","LOQ","YES","-99","","256.3","0.50","20","" "TP-PFC-019-TPI","537 (Modified)","DL","320-29732-1","TALSAC","335-76-2","Perfluorodecanoic acid
(PFDA)","4.8","ng/L","J D","4.3","DL","","TRG","","","24","LOQ","NO","-99","","256.3","0.50","9.8",""
"TP-PFC-019-TPI", "537 (Modified)", "DL", "320-29732-1", "TALSAC", "335-77-3", "Perfluorodecanesulfonic acid
(PFDS)","29","ng/L","U","12","DL","","TRG","","","39","LOQ","NO","-99","","256.3","0.50","29",""
"TP-PFC-019-TPI", "537 (Modified)", "DL", "320-29732-1", "TALSAC", "355-46-4", "Perfluorohexanesulfonic acid
(PFHxS)","360","ng/L","D","8.5","DL","","TRG","","","24","LOQ","NO","-99","","256.3","0.50","20",""
"TP-PFC-019-TPI", "537 (Modified)", "DL", "320-29732-1", "TALSAC", "375-22-4", "Perfluorobutanoic acid
(PFBA)","80","ng/L","D","4.5","DL","","TRG","","","24","LOQ","NO","-99","","256.3","0.50","9.8",""
"TP-PFC-019-TPI", "537 (Modified)", "DL", "320-29732-1", "TALSAC", "375-73-5", "Perfluorobutanesulfonic acid
(PFBS)","55","ng/L","D","9.0","DL","","TRG","","","24","LOQ","NO","-99","","256.3","0.50","20",""
"TP-PFC-019-TPI", "537 (Modified)", "DL", "320-29732-1", "TALSAC", "375-85-9", "Perfluoroheptanoic acid
(PFHpA)","70","ng/L","D","7.8","DL","","TRG","","","24","LOQ","NO","-99","","256.3","0.50","20",""
"TP-PFC-019-TPI", "537 (Modified)", "DL", "320-29732-1", "TALSAC", "375-92-8", "Perfluoroheptanesulfonic Acid
(PFHpS)","12","ng/L","J D","7.0","DL","","TRG","","","24","LOQ","NO","-99","","256.3","0.50","20",""
"TP-PFC-019-TPI", "537 (Modified)", "DL", "320-29732-1", "TALSAC", "375-95-1", "Perfluorononanoic acid
(PFNA)","20","ng/L","U","6.4","DL","","TRG","","","24","LOQ","NO","-99","","256.3","0.50","20",""
"TP-PFC-019-TPI", "537 (Modified)", "DL", "320-29732-1", "TALSAC", "72629-94-8", "Perfluorotridecanoic Acid
(PFTriA)", "5.6", "ng/L", "J D", "5.4", "DL", "", "TRG", "", "", "24", "LOQ", "NO", "-99", "", "256.3", "0.50", "20", ""
"TP-PFC-019-TPI", "537 (Modified)", "DL", "320-29732-1", "TALSAC", "754-91-6", "Perfluorooctane Sulfonamide
(FOSA)","18","ng/L","J D","6.2","DL","","TRG","","","390","LOQ","NO","-99","","256.3","0.50","20",""
"TP-PFC-019-TPI", "537 (Modified)", "DL", "320-29732-1", "TALSAC", "STL00990", "13C4
PFOA", "86", "ng/L", "", "-99", "DL", "", "TRG", "88", "", "-99", "LOQ", "YES", "97.5", "", "256.3", "0.50", "980", ""
"TP-PFC-019-TPI", "537 (Modified)", "DL", "320-29732-1", "TALSAC", "STL00991", "13C4
PFOS","77","ng/L","","-99","DL","","TRG","82","","-99","LOQ","YES","93.3","","256.3","0.50","980",""
"TP-PFC-019-TPI", "537 (Modified)", "DL", "320-29732-1", "TALSAC", "STL00992", "13C4
PFBA","95","ng/L","","-99","DL","","TRG","98","","-99","LOQ","YES","97.5","","256.3","0.50","980",""
"TP-PFC-019-TPI", "537 (Modified)", "DL", "320-29732-1", "TALSAC", "STL00993", "13C2
PFHxA","92","ng/L","","-99","DL","","TRG","94","","-99","LOQ","YES","97.5","","256.3","0.50","980",""
"TP-PFC-019-TPI", "537 (Modified)", "DL", "320-29732-1", "TALSAC", "STL00994", "1802
PFHxS","89","ng/L","","-99","DL","","TRG","96","","-99","LOQ","YES","92.3","","256.3","0.50","980",""
"TP-PFC-019-TPI", "537 (Modified)", "DL", "320-29732-1", "TALSAC", "STL00995", "13C5
PFNA","75","ng/L","","-99","DL","","TRG","77","","-99","LOQ","YES","97.5","","256.3","0.50","980",""
"TP-PFC-019-TPI", "537 (Modified)", "DL", "320-29732-1", "TALSAC", "STL00996", "13C2
PFDA", "60", "ng/L", "", "-99", "DL", "", "TRG", "62", "", "-99", "LOQ", "YES", "97.5", "", "256.3", "0.50", "980", ""
"TP-PFC-019-TPI", "537 (Modified)", "DL", "320-29732-1", "TALSAC", "STL00997", "13C2
PFUnA","53","ng/L","","-99","DL","","TRG","54","","-99","LOQ","YES","97.5","","256.3","0.50","980",""
"TP-PFC-019-TPI", "537 (Modified)", "DL", "320-29732-1", "TALSAC", "STL00998", "13C2
PFDoA","45","ng/L","","-99","DL","","TRG","47","","-99","LOQ","YES","97.5","","256.3","0.50","980",""
"TP-PFC-019-TPI", "537 (Modified)", "DL", "320-29732-1", "TALSAC", "STL01056", "13C8
FOSA","14","ng/L","Q","-99","DL","","TRG","15","","-99","LOQ","YES","97.5","","256.3","0.50","980",""
"TP-PFC-019-TPI", "537 (Modified)", "DL", "320-29732-1", "TALSAC", "STL01892", "13C4-
```

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PFHpA","100","ng/L","","-99","DL","","TRG","105","","-99","LOQ","YES","97.5","","256.3","0.50","980",""
"TP-PFC-019-TPI", "537 (Modified)", "DL", "320-29732-1", "TALSAC", "STL01893", "13C5
PFPeA","93","ng/L","","-99","DL","","TRG","95","","-99","LOQ","YES","97.5","","256.3","0.50","980",""
"TP-PFC-019-TPI", "537 (Modified)", "RE", "320-29732-1", "TALSAC", "376-06-7", "Perfluorotetradecanoic acid
(PFTeA)","1.6","ng/L","J M Q","0.39","DL","","TRG","","","2.4","LOQ","YES","-99","","258","0.50","0.97",""
"TP-PFC-019-TPI", "537 (Modified)", "RE", "320-29732-1", "TALSAC", "STL00998", "13C2
PFDoA","65","ng/L","","-99","DL","","TRG","67","","-99","LOQ","YES","96.9","","258","0.50","97",""
"TP-PFC-019-TPI", "537 (Modified)", "RES", "320-29732-1", "TALSAC", "1763-23-1", "Perfluorooctanesulfonic acid
(PFOS)","370","ng/L","E","1.2","DL","","TRG","","","3.9","LOQ","NO","-99","","256.3","0.50","2.9",""
"TP-PFC-019-TPI", "537 (Modified)", "RES", "320-29732-1", "TALSAC", "2058-94-8", "Perfluoroundecanoic acid
(PFUnA)","2.0","ng/L","U","0.73","DL","","TRG","","","2.4","LOQ","YES","-99","","256.3","0.50","2.0",""
"TP-PFC-019-TPI", "537 (Modified)", "RES", "320-29732-1", "TALSAC", "2706-90-3", "Perfluoropentanoic acid
(PFPeA)","180","ng/L","","0.96","DL","","TRG","","","2.4","LOQ","YES","-99","","256.3","0.50","2.0",""
"TP-PFC-019-TPI", "537 (Modified)", "RES", "320-29732-1", "TALSAC", "307-24-4", "Perfluorohexanoic acid
(PFHxA)","350","ng/L","","0.77","DL","","TRG","","","2.4","LOQ","YES","-99","","256.3","0.50","2.0",""
"TP-PFC-019-TPI", "537 (Modified)", "RES", "320-29732-1", "TALSAC", "307-55-1", "Perfluorododecanoic acid
(PFDoA)","2.0","ng/L","U","0.57","DL","","TRG","","","2.4","LOQ","YES","-99","","256.3","0.50","2.0",""
"TP-PFC-019-TPI","537 (Modified)","RES","320-29732-1","TALSAC","335-67-1","Perfluorooctanoic acid (PFOA)","1300","ng/L","M E","0.73","DL","","TRG","","","2.4","LOQ","NO","-99","","256.3","0.50","2.0",""
"TP-PFC-019-TPI", "537 (Modified)", "RES", "320-29732-1", "TALSAC", "335-76-2", "Perfluorodecanoic acid
(PFDA)","1.1","ng/L","J","0.43","DL","","TRG","","","2.4","LOQ","YES","-99","","256.3","0.50","0.98",""
"TP-PFC-019-TPI", "537 (Modified)", "RES", "320-29732-1", "TALSAC", "335-77-3", "Perfluorodecanesulfonic acid
(PFDS)","2.9","ng/L","U","1.2","DL","","TRG","","","3.9","LOQ","YES","-99","","256.3","0.50","2.9",""
"TP-PFC-019-TPI", "537 (Modified)", "RES", "320-29732-1", "TALSAC", "355-46-4", "Perfluorohexanesulfonic acid
(PFHxS)","350","ng/L","","0.85","DL","","TRG","","","2.4","LOQ","YES","-99","","256.3","0.50","2.0",""
"TP-PFC-019-TPI", "537 (Modified)", "RES", "320-29732-1", "TALSAC", "375-22-4", "Perfluorobutanoic acid
(PFBA)","77","ng/L","M","0.45","DL","","TRG","","","2.4","LOQ","YES","-99","","256.3","0.50","0.98",""
"TP-PFC-019-TPI", "537 (Modified)", "RES", "320-29732-1", "TALSAC", "375-73-5", "Perfluorobutanesulfonic acid
(PFBS)","52","ng/L","","0.90","DL","","TRG","","","2.4","LOQ","YES","-99","","256.3","0.50","2.0",""
"TP-PFC-019-TPI", "537 (Modified)", "RES", "320-29732-1", "TALSAC", "375-85-9", "Perfluoroheptanoic acid
(PFHpA)","66","ng/L","","0.78","DL","","TRG","","","2.4","LOQ","YES","-99","","256.3","0.50","2.0",""
"TP-PFC-019-TPI", "537 (Modified)", "RES", "320-29732-1", "TALSAC", "375-92-8", "Perfluoroheptanesulfonic Acid
(PFHpS)","9.0","ng/L","","0.70","DL","","TRG","","","2.4","LOQ","YES","-99","","256.3","0.50","2.0",""
"TP-PFC-019-TPI", "537 (Modified)", "RES", "320-29732-1", "TALSAC", "375-95-1", "Perfluorononanoic acid
(PFNA)","2.3","ng/L","J","0.64","DL","","TRG","","","2.4","LOQ","YES","-99","","256.3","0.50","2.0",""
"TP-PFC-019-TPI", "537 (Modified)", "RES", "320-29732-1", "TALSAC", "72629-94-8", "Perfluorotridecanoic Acid
(PFTriA)","2.0","ng/L","U","0.54","DL","","TRG","","","2.4","LOQ","YES","-99","","256.3","0.50","2.0",""
"TP-PFC-019-TPI", "537 (Modified)", "RES", "320-29732-1", "TALSAC", "754-91-6", "Perfluorooctane Sulfonamide"
(FOSA)","1.1","ng/L","J","0.62","DL","","TRG","","","39","LOQ","YES","-99","","256.3","0.50","2.0",""
"TP-PFC-019-TPI", "537 (Modified)", "RES", "320-29732-1", "TALSAC", "STL00990", "13C4
PFOA", "66", "ng/L", "", "-99", "DL", "", "TRG", "67", "", "-99", "LOQ", "YES", "97.5", "", "256.3", "0.50", "98", ""
"TP-PFC-019-TPI", "537 (Modified)", "RES", "320-29732-1", "TALSAC", "STL00991", "13C4
PFOS","78","ng/L","","-99","DL","","TRG","83","","-99","LOQ","YES","93.3","","256.3","0.50","98",""
"TP-PFC-019-TPI", "537 (Modified)", "RES", "320-29732-1", "TALSAC", "STL00992", "13C4
PFBA","75","ng/L","","-99","DL","","TRG","77","","-99","LOQ","YES","97.5","","256.3","0.50","98",""
"TP-PFC-019-TPI", "537 (Modified)", "RES", "320-29732-1", "TALSAC", "STL00993", "13C2
PFHxA","69","ng/L","","-99","DL","","TRG","71","","-99","LOQ","YES","97.5","","256.3","0.50","98",""
"TP-PFC-019-TPI", "537 (Modified)", "RES", "320-29732-1", "TALSAC", "STL00994", "1802
PFHxS","80","ng/L","","-99","DL","","TRG","87","","-99","LOQ","YES","92.3","","256.3","0.50","98",""
"TP-PFC-019-TPI", "537 (Modified)", "RES", "320-29732-1", "TALSAC", "STL00995", "13C5
PFNA","64","ng/L","","-99","DL","","TRG","66","","-99","LOQ","YES","97.5","","256.3","0.50","98",""
"TP-PFC-019-TPI", "537 (Modified)", "RES", "320-29732-1", "TALSAC", "STL00996", "13C2
PFDA", "64", "ng/L", "", "-99", "DL", "", "TRG", "65", "", "-99", "LOQ", "YES", "97.5", "", "256.3", "0.50", "98", ""
"TP-PFC-019-TPI", "537 (Modified)", "RES", "320-29732-1", "TALSAC", "STL00997", "13C2
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PFUnA", "47", "ng/L", "", "-99", "DL", "", "TRG", "48", "", "-99", "LOQ", "YES", "97.5", "", "256.3", "0.50", "98", ""
"TP-PFC-019-TPI", "537 (Modified)", "RES", "320-29732-1", "TALSAC", "STL00998", "13C2
PFDoA","44","ng/L","","-99","DL","","TRG","45","","-99","LOQ","YES","97.5","","256.3","0.50","98",""
"TP-PFC-019-TPI", "537 (Modified)", "RES", "320-29732-1", "TALSAC", "STL01056", "13C8
FOSA","13","ng/L","Q","-99","DL","","TRG","14","","-99","LOQ","YES","97.5","","256.3","0.50","98",""
"TP-PFC-019-TPI", "537 (Modified)", "RES", "320-29732-1", "TALSAC", "STL01892", "13C4-
PFHpA","91","ng/L","","-99","DL","","TRG","93","","-99","LOQ","YES","97.5","","256.3","0.50","98",""
"TP-PFC-019-TPI", "537 (Modified)", "RES", "320-29732-1", "TALSAC", "STL01893", "13C5"
PFPeA", "78", "ng/L", "", "-99", "DL", "", "TRG", "80", "", "-99", "LOQ", "YES", "97.5", "", "256.3", "0.50", "98", ""
"TP-PFC-019-MID-CARBON","537 (Modified)","RE","320-29732-2","TALSAC","376-06-7","Perfluorotetradecanoic
acid (PFTeA)","1.4","ng/L","J M Q","0.40","DL","","TRG","","","2.5","LOQ","YES","-99","","252","0.50","0.99",""
"TP-PFC-019-MID-CARBON", "537 (Modified)", "RE", "320-29732-2", "TALSAC", "STL00998", "13C2"
PFDoA","91","ng/L","","-99","DL","","TRG","92","","-99","LOQ","YES","99.2","","252","0.50","99",""
"TP-PFC-019-MID-CARBON", "537 (Modified)", "RES", "320-29732-2", "TALSAC", "1763-23-
1"."Perfluorooctanesulfonic acid
(PFOS)","3.0","ng/L","U","1.3","DL","","TRG","","1.4.0","LOQ","YES","-99","","250.8","0.50","3.0",""
"TP-PFC-019-MID-CARBON","537 (Modified)","RES","320-29732-2","TALSAC","2058-94-8","Perfluoroundecanoic
acid (PFUnA)","2.0","ng/L","U","0.75","DL","","TRG","","","2.5","LOQ","YES","-99","","250.8","0.50","2.0","" "TP-PFC-019-MID-CARBON","537 (Modified)","RES","320-29732-2","TALSAC","2706-90-3","Perfluoropentanoic
acid (PFPeA)","16","ng/L","","0.99","DL","","TRG","","","2.5","LOQ","YES","-99","","250.8","0.50","2.0",""
"TP-PFC-019-MID-CARBON","537 (Modified)","RES","320-29732-2","TALSAC","307-24-4","Perfluorohexanoic
acid (PFHxA)","1.2","ng/L","J","0.78","DL","","TRG","","","2.5","LOQ","YES","-99","","250.8","0.50","2.0",""
"TP-PFC-019-MID-CARBON", "537 (Modified)", "RES", "320-29732-2", "TALSAC", "307-55-1", "Perfluorododecanoic
acid (PFDoA)","2.0","ng/L","U","0.58","DL","","TRG","","","2.5","LOQ","YES","-99","","250.8","0.50","2.0",""
"TP-PFC-019-MID-CARBON","537 (Modified)","RES","320-29732-2","TALSAC","335-67-1","Perfluorooctanoic
acid (PFOA)","2.0","ng/L","U M","0.75","DL","","TRG","","","2.5","LOQ","YES","-99","","250.8","0.50","2.0",""
"TP-PFC-019-MID-CARBON", "537 (Modified)", "RES", "320-29732-2", "TALSAC", "335-76-2", "Perfluorodecanoic
acid (PFDA)", "1.0", "ng/L", "U", "0.44", "DL", "", "TRG", "", "", "2.5", "LOQ", "YES", "-99", "", "250.8", "0.50", "1.0", ""
"TP-PFC-019-MID-CARBON","537 (Modified)","RES","320-29732-2","TALSAC","335-77-
3","Perfluorodecanesulfonic acid
(PFDS)","3.0","ng/L","U","1.2","DL","","TRG","","1.4.0","LOQ","YES","-99","","250.8","0.50","3.0",""
"TP-PFC-019-MID-CARBON","537 (Modified)","RES","320-29732-2","TALSAC","355-46-
4"."Perfluorohexanesulfonic acid
(PFHxS)","2.0","ng/L","U","0.87","DL","","TRG","","","2.5","LOQ","YES","-99","","250.8","0.50","2.0",""
"TP-PFC-019-MID-CARBON","537 (Modified)","RES","320-29732-2","TALSAC","375-22-4","Perfluorobutanoic
acid (PFBA)","100","ng/L","","0.46","DL","","TRG","","","2.5","LOQ","YES","-99","","250.8","0.50","1.0",""
"TP-PFC-019-MID-CARBON", "537 (Modified)", "RES", "320-29732-2", "TALSAC", "375-73-
5","Perfluorobutanesulfonic acid
(PFBS)","2.0","ng/L","U","0.92","DL","","TRG","","","2.5","LOQ","YES","-99","","250.8","0.50","2.0",""
"TP-PFC-019-MID-CARBON", "537 (Modified)", "RES", "320-29732-2", "TALSAC", "375-85-9", "Perfluoroheptanoic
acid (PFHpA)","2.0","ng/L","U M","0.80","DL","","TRG","","","2.5","LOQ","YES","-99","","250.8","0.50","2.0",""
"TP-PFC-019-MID-CARBON","537 (Modified)","RES","320-29732-2","TALSAC","375-92-
8", "Perfluoroheptanesulfonic Acid
(PFHpS)","2.0","ng/L","U","0.71","DL","","TRG","","","2.5","LOQ","YES","-99","","250.8","0.50","2.0",""
"TP-PFC-019-MID-CARBON", "537 (Modified)", "RES", "320-29732-2", "TALSAC", "375-95-1", "Perfluorononanoic
acid (PFNA)", "2.0", "ng/L", "U", "0.65", "DL", "", "TRG", "", "", "2.5", "LOQ", "YES", "-99", "", "250.8", "0.50", "2.0", ""
"TP-PFC-019-MID-CARBON","537 (Modified)","RES","320-29732-2","TALSAC","72629-94-
8"."Perfluorotridecanoic Acid
(PFTriA)","2.0","ng/L","U","0.55","DL","","TRG","","","2.5","LOQ","YES","-99","","250.8","0.50","2.0",""
"TP-PFC-019-MID-CARBON", "537 (Modified)", "RES", "320-29732-2", "TALSAC", "754-91-6", "Perfluorooctane"
Sulfonamide
(FOSA)","2.5","ng/L","J","0.64","DL","","TRG","","","40","LOQ","YES","-99","","250.8","0.50","2.0",""
"TP-PFC-019-MID-CARBON","537 (Modified)","RES","320-29732-2","TALSAC","STL00990","13C4
PFOA","100","ng/L","","-99","DL","","TRG","102","","-99","LOQ","YES","99.7","","250.8","0.50","100",""
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"TP-PFC-019-MID-CARBON","537 (Modified)","RES","320-29732-2","TALSAC","STL00991","13C4
PFOS","94","ng/L","","-99","DL","","TRG","99","","-99","LOQ","YES","95.3","","250.8","0.50","100",""
"TP-PFC-019-MID-CARBON", "537 (Modified)", "RES", "320-29732-2", "TALSAC", "STL00992", "13C4
PFBA","100","ng/L","","-99","DL","","TRG","101","","-99","LOQ","YES","99.7","","250.8","0.50","100",""
"TP-PFC-019-MID-CARBON", "537 (Modified)", "RES", "320-29732-2", "TALSAC", "STL00993", "13C2
PFHxA","100","ng/L","","-99","DL","","TRG","100","","-99","LOQ","YES","99.7","","250.8","0.50","100",""
"TP-PFC-019-MID-CARBON","537 (Modified)","RES","320-29732-2","TALSAC","STL00994","18O2
PFHxS", "97", "ng/L", "", "-99", "DL", "", "TRG", "102", "", "-99", "LOQ", "YES", "94.3", "", "250.8", "0.50", "100", ""
"TP-PFC-019-MID-CARBON", "537 (Modified)", "RES", "320-29732-2", "TALSAC", "STL00995", "13C5
PFNA", "81", "ng/L", "", "-99", "DL", "", "TRG", "81", "", "-99", "LOQ", "YES", "99.7", "", "250.8", "0.50", "100", ""
"TP-PFC-019-MID-CARBON","537 (Modified)","RES","320-29732-2","TALSAC","STL00996","13C2
PFDA","72","ng/L","","-99","DL","","TRG","72","","-99","LOQ","YES","99.7","","250.8","0.50","100",""
"TP-PFC-019-MID-CARBON","537 (Modified)","RES","320-29732-2","TALSAC","STL00997","13C2
PFUnA","63","ng/L","","-99","DL","","TRG","63","","-99","LOQ","YES","99.7","","250.8","0.50","100",""
"TP-PFC-019-MID-CARBON","537 (Modified)","RES","320-29732-2","TALSAC","STL00998","13C2
PFDoA","58","ng/L","","-99","DL","","TRG","58","","-99","LOQ","YES","99.7","","250.8","0.50","100",""
"TP-PFC-019-MID-CARBON", "537 (Modified)", "RES", "320-29732-2", "TALSAC", "STL01056", "13C8
FOSA", "6.2", "ng/L", "Q", "-99", "DL", "", "TRG", "6", "", "-99", "LOQ", "YES", "99.7", "", "250.8", "0.50", "100", "", "100", "", "100", "", "100", "", "100", "", "100", "", "100", "", "100", "", "100", "", "100", "", "100", "", "100", "", "100", "", "100", "", "100", "", "100", "", "100", "", "100", "", "100", "", "100", "", "100", "", "100", "", "100", "", "100", "", "100", "", "100", "100", "", "100", "100", "", "100", "100", "", "100", "100", "100", "100", "100", "100", "100", "100", "100", "100", "100", "100", "100", "100", "100", "100", "100", "100", "100", "100", "100", "100", "100", "100", "100", "100", "100", "100", "100", "100", "100", "100", "100", "100", "100", "100", "100", "100", "100", "100", "100", "100", "100", "100", "100", "100", "100", "100", "100", "100", "100", "100", "100", "100", "100", "100", "100", "100", "100", "100", "100", "100", "100", "100", "100", "100", "100", "100", "100", "100", "100", "100", "100", "100", "100", "100", "100", "100", "100", "100", "100", "100", "100", "100", "100", "100", "100", "100", "100", "100", "100", "100", "100", "100", "100", "100", "100", "100", "100", "100", "100", "100", "100", "100", "100", "100", "100", "100", "100", "100", "100", "100", "100", "100", "100", "100", "100", "100", "100", "100", "100", "100", "100", "100", "100", "100", "100", "100", "100", "100", "100", "100", "100", "100", "100", "100", "100", "100", "100", "100", "100", "100", "100", "100", "100", "100", "100", "100", "100", "100", "100", "100", "100", "100", "100", "100", "100", "100", "100", "100", "100", "100", "100", "100", "100", "100", "100", "100", "100", "100", "100", "100", "100", "100", "100", "100", "100", "100", "100", "100", "100", "100", "100", "100", "100", "100", "100", "100", "100", "100", "100", "100", "100", "100", "100", "100", "100", "100", "100", "100", "100", "100", "100", "100", "100", "100", "100", "100", "100", "100", "100", "100", "100", "100", "100", "100", "100", "100", "100", "100", "100", "100", "100", "100", "100", "100", "100", "100", "100", "1
"TP-PFC-019-MID-CARBON", "537 (Modified)", "RES", "320-29732-2", "TALSAC", "STL01892", "13C4-
PFHpA","120","ng/L","","-99","DL","","TRG","116","","-99","LOQ","YES","99.7","","250.8","0.50","100",""
"TP-PFC-019-MID-CARBON", "537 (Modified)", "RES", "320-29732-2", "TALSAC", "STL01893", "13C5
PFPeA","100","ng/L","","-99","DL","","TRG","102","","-99","LOQ","YES","99.7","","250.8","0.50","100",""
"TP-PFC-019-TPE", "537 (Modified)", "RE", "320-29732-3", "TALSAC", "376-06-7", "Perfluorotetradecanoic acid
(PFTeA)","1.5","ng/L","J M Q","0.39","DL","","TRG","","","2.5","LOQ","YES","-99","","254.6","0.50","0.98",""
"TP-PFC-019-TPE", "537 (Modified)", "RE", "320-29732-3", "TALSAC", "STL00998", "13C2
PFDoA", "85", "ng/L", "", "-99", "DL", "", "TRG", "87", "", "-99", "LOQ", "YES", "98.2", "", "254.6", "0.50", "98", ""
"TP-PFC-019-TPE", "537 (Modified)", "RES", "320-29732-3", "TALSAC", "1763-23-1", "Perfluorooctanesulfonic acid
(PFOS)","2.9","ng/L","U","1.2","DL","","TRG","","","3.9","LOQ","YES","-99","","259.5","0.50","2.9",""
"TP-PFC-019-TPE", "537 (Modified)", "RES", "320-29732-3", "TALSAC", "2058-94-8", "Perfluoroundecanoic acid
(PFUnA)","1.9","ng/L","U","0.72","DL","","TRG","","","2.4","LOQ","YES","-99","","259.5","0.50","1.9",""
"TP-PFC-019-TPE", "537 (Modified)", "RES", "320-29732-3", "TALSAC", "2706-90-3", "Perfluoropentanoic acid
(PFPeA)","24","ng/L","","0.95","DL","","TRG","","","2.4","LOQ","YES","-99","","259.5","0.50","1.9",""
"TP-PFC-019-TPE", "537 (Modified)", "RES", "320-29732-3", "TALSAC", "307-24-4", "Perfluorohexanoic acid
(PFHxA)", "6.1", "ng/L", "", "0.76", "DL", "", "TRG", "", "", "2.4", "LOQ", "YES", "-99", "", "259.5", "0.50", "1.9", ""
"TP-PFC-019-TPE", "537 (Modified)", "RES", "320-29732-3", "TALSAC", "307-55-1", "Perfluorododecanoic acid
(PFDoA)","1.9","ng/L","U","0.56","DL","","TRG","","","2.4","LOQ","YES","-99","","259.5","0.50","1.9",""
"TP-PFC-019-TPE", "537 (Modified)", "RES", "320-29732-3", "TALSAC", "335-67-1", "Perfluorooctanoic acid
(PFOA)","0.76","ng/L","J M","0.72","DL","","TRG","","","2.4","LOQ","YES","-99","","259.5","0.50","1.9",""
"TP-PFC-019-TPE", "537 (Modified)", "RES", "320-29732-3", "TALSAC", "335-76-2", "Perfluorodecanoic acid
(PFDA)","0.96","ng/L","U","0.42","DL","","TRG","","","2.4","LOQ","YES","-99","","259.5","0.50","0.96",""
"TP-PFC-019-TPE", "537 (Modified)", "RES", "320-29732-3", "TALSAC", "335-77-3", "Perfluorodecanesulfonic acid
(PFDS)","2.9","ng/L","U","1.2","DL","","TRG","","","3.9","LOQ","YES","-99","","259.5","0.50","2.9",""
"TP-PFC-019-TPE", "537 (Modified)", "RES", "320-29732-3", "TALSAC", "355-46-4", "Perfluorohexanesulfonic acid
(PFHxS)","1.9","ng/L","U","0.84","DL","","TRG","","","2.4","LOQ","YES","-99","","259.5","0.50","1.9",""
"TP-PFC-019-TPE", "537 (Modified)", "RES", "320-29732-3", "TALSAC", "375-22-4", "Perfluorobutanoic acid
(PFBA)","85","ng/L","","0.44","DL","","TRG","","","2.4","LOQ","YES","-99","","259.5","0.50","0.96",""
"TP-PFC-019-TPE", "537 (Modified)", "RES", "320-29732-3", "TALSAC", "375-73-5", "Perfluorobutanesulfonic acid
(PFBS)","1.9","ng/L","U","0.88","DL","","TRG","","","2.4","LOQ","YES","-99","","259.5","0.50","1.9",""
"TP-PFC-019-TPE","537 (Modified)","RES","320-29732-3","TALSAC","375-85-9","Perfluoroheptanoic acid
(PFHpA)","1.9","ng/L","U","0.77","DL","","TRG","","","2.4","LOQ","YES","-99","","259.5","0.50","1.9",""
"TP-PFC-019-TPE","537 (Modified)","RES","320-29732-3","TALSAC","375-92-8","Perfluoroheptanesulfonic Acid
(PFHpS)","1.9","ng/L","U","0.69","DL","","TRG","","","2.4","LOQ","YES","-99","","259.5","0.50","1.9",""
"TP-PFC-019-TPE", "537 (Modified)", "RES", "320-29732-3", "TALSAC", "375-95-1", "Perfluorononanoic acid
(PFNA)","1.9","ng/L","U","0.63","DL","","TRG","","","2.4","LOQ","YES","-99","","259.5","0.50","1.9",""
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"TP-PFC-019-TPE", "537 (Modified)", "RES", "320-29732-3", "TALSAC", "72629-94-8", "Perfluorotridecanoic Acid
(PFTriA)","1.9","ng/L","U","0.53","DL","","TRG","","","2.4","LOQ","YES","-99","","259.5","0.50","1.9",""
"TP-PFC-019-TPE","537 (Modified)","RES","320-29732-3","TALSAC","754-91-6","Perfluorooctane Sulfonamide
(FOSA)","2.1","ng/L","J","0.61","DL","","TRG","","","39","LOQ","YES","-99","","259.5","0.50","1.9",""
"TP-PFC-019-TPE", "537 (Modified)", "RES", "320-29732-3", "TALSAC", "STL00990", "13C4
PFOA","99","ng/L","","-99","DL","","TRG","102","","-99","LOQ","YES","96.3","","259.5","0.50","96",""
"TP-PFC-019-TPE", "537 (Modified)", "RES", "320-29732-3", "TALSAC", "STL00991", "13C4
PFOS","94","ng/L","","-99","DL","","TRG","102","","-99","LOQ","YES","92.1","","259.5","0.50","96",""
"TP-PFC-019-TPE", "537 (Modified)", "RES", "320-29732-3", "TALSAC", "STL00992", "13C4
PFBA", "98", "ng/L", "", "-99", "DL", "", "TRG", "102", "", "-99", "LOQ", "YES", "96.3", "", "259.5", "0.50", "96", ""
"TP-PFC-019-TPE","537 (Modified)","RES","320-29732-3","TALSAC","STL00993","13C2 PFHxA","97","ng/L","","-99","DL","","TRG","101","","-99","LOQ","YES","96.3","","259.5","0.50","96",""
"TP-PFC-019-TPE", "537 (Modified)", "RES", "320-29732-3", "TALSAC", "STL00994", "1802
PFHxS", "96", "ng/L", "", "-99", "DL", "", "TRG", "105", "", "-99", "LOQ", "YES", "91.1", "", "259.5", "0.50", "96", ""
"TP-PFC-019-TPE", "537 (Modified)", "RES", "320-29732-3", "TALSAC", "STL00995", "13C5
PFNA", "82", "ng/L", "", "-99", "DL", "", "TRG", "85", "", "-99", "LOQ", "YES", "96.3", "", "259.5", "0.50", "96", ""
"TP-PFC-019-TPE", "537 (Modified)", "RES", "320-29732-3", "TALSAC", "STL00996", "13C2
PFDA", "90", "ng/L", "", "-99", "DL", "", "TRG", "93", "", "-99", "LOQ", "YES", "96.3", "", "259.5", "0.50", "96", "", "10.50", "96", "10.50", "96", "10.50", "96", "10.50", "96", "10.50", "96", "10.50", "96", "10.50", "96", "10.50", "96", "10.50", "96", "10.50", "96", "10.50", "96", "10.50", "96", "10.50", "96", "10.50", "96", "10.50", "96", "10.50", "96", "10.50", "96", "10.50", "96", "10.50", "96", "10.50", "96", "10.50", "96", "10.50", "96", "10.50", "96", "10.50", "96", "10.50", "96", "96", "96", "96", "96", "96", "96", "96", "96", "96", "96", "96", "96", "96", "96", "96", "96", "96", "96", "96", "96", "96", "96", "96", "96", "96", "96", "96", "96", "96", "96", "96", "96", "96", "96", "96", "96", "96", "96", "96", "96", "96", "96", "96", "96", "96", "96", "96", "96", "96", "96", "96", "96", "96", "96", "96", "96", "96", "96", "96", "96", "96", "96", "96", "96", "96", "96", "96", "96", "96", "96", "96", "96", "96", "96", "96", "96", "96", "96", "96", "96", "96", "96", "96", "96", "96", "96", "96", "96", "96", "96", "96", "96", "96", "96", "96", "96", "96", "96", "96", "96", "96", "96", "96", "96", "96", "96", "96", "96", "96", "96", "96", "96", "96", "96", "96", "96", "96", "96", "96", "96", "96", "96", "96", "96", "96", "96", "96", "96", "96", "96", "96", "96", "96", "96", "96", "96", "96", "96", "96", "96", "96", "96", "96", "96", "96", "96", "96", "96", "96", "96", "96", "96", "96", "96", "96", "96", "96", "96", "96", "96", "96", "96", "96", "96", "96", "96", "96", "96", "96", "96", "96", "96", "96", "96", "96", "96", "96", "96", "96", "96", "96", "96", "96", "96", "96", "96", "96", "96", "96", "96", "96", "96", "96", "96", "96", "96", "96", "96", "96", "96", "96", "96", "96", "96", "96", "96", "96", "96", "96", "96", "96", "96", "96", "96", "96", "96", "96", "96", "96", "96", "96", "96", "96", "96", "96", "96", "96", "96", "96", "96", "96", "96", "96", "96", "96", "96", "96", "96", "96", "96", "96", "96", "96", "96", "96", "96", "96", "96", "96", "96", "96", "96", "96", "96", "96", "96", "96", "96", "9
"TP-PFC-019-TPE", "537 (Modified)", "RES", "320-29732-3", "TALSAC", "STL00997", "13C2
PFUnA","75","ng/L","","-99","DL","","TRG","78","","-99","LOQ","YES","96.3","","259.5","0.50","96",""
"TP-PFC-019-TPE", "537 (Modified)", "RES", "320-29732-3", "TALSAC", "STL00998", "13C2
PFDoA","67","ng/L","","-99","DL","","TRG","69","","-99","LOQ","YES","96.3","","259.5","0.50","96",""
"TP-PFC-019-TPE", "537 (Modified)", "RES", "320-29732-3", "TALSAC", "STL01056", "13C8
FOSA", "2.0", "ng/L", "Q", "-99", "DL", "", "TRG", "2", "", "-99", "LOQ", "YES", "96.3", "", "259.5", "0.50", "96", ""
"TP-PFC-019-TPE", "537 (Modified)", "RES", "320-29732-3", "TALSAC", "STL01892", "13C4-
PFHpA","110","ng/L","","-99","DL","","TRG","118","","-99","LOQ","YES","96.3","","259.5","0.50","96",""
"TP-PFC-019-TPE", "537 (Modified)", "RES", "320-29732-3", "TALSAC", "STL01893", "13C5
PFPeA","95","ng/L","","-99","DL","","TRG","98","","-99","LOQ","YES","96.3","","259.5","0.50","96",""
"TP-PFC-019-TPE-D", "537 (Modified)", "RE", "320-29732-4", "TALSAC", "754-91-6", "Perfluorooctane Sulfonamide"
(FOSA)","2.0","ng/L","U H","0.65","DL","","TRG","","","41","LOQ","NO","-99","","245.5","0.50","2.0",""
"TP-PFC-019-TPE-D", "537 (Modified)", "RE", "320-29732-4", "TALSAC", "STL01056", "13C8
FOSA","1.8","ng/L","Q","-99","DL","","TRG","2","","-99","LOQ","YES","102","","245.5","0.50","100",""
"TP-PFC-019-TPE-D", "537 (Modified)", "RES", "320-29732-4", "TALSAC", "1763-23-1", "Perfluorooctanesulfonic acid
(PFOS)","2.9","ng/L","U","1.2","DL","","TRG","","","3.9","LOQ","YES","-99","","258.4","0.50","2.9",""
"TP-PFC-019-TPE-D","537 (Modified)","RES","320-29732-4","TALSAC","2058-94-8","Perfluoroundecanoic acid
(PFUnA)","1.9","ng/L","U","0.72","DL","","TRG","","","2.4","LOQ","YES","-99","","258.4","0.50","1.9",""
"TP-PFC-019-TPE-D", "537 (Modified)", "RES", "320-29732-4", "TALSAC", "2706-90-3", "Perfluoropentanoic acid
(PFPeA)","24","ng/L","","0.96","DL","","TRG","","","2.4","LOQ","YES","-99","","258.4","0.50","1.9",""
"TP-PFC-019-TPE-D", "537 (Modified)", "RES", "320-29732-4", "TALSAC", "307-24-4", "Perfluorohexanoic acid
(PFHxA)","6.4","ng/L","","0.76","DL","","TRG","","","2.4","LOQ","YES","-99","","258.4","0.50","1.9",""
"TP-PFC-019-TPE-D", "537 (Modified)", "RES", "320-29732-4", "TALSAC", "307-55-1", "Perfluorododecanoic acid
(PFDoA)","1.9","ng/L","U","0.57","DL","","TRG","","","2.4","LOQ","YES","-99","","258.4","0.50","1.9",""
"TP-PFC-019-TPE-D", "537 (Modified)", "RES", "320-29732-4", "TALSAC", "335-67-1", "Perfluorooctanoic acid
(PFOA)","1.9","ng/L","U M","0.72","DL","","TRG","","","2.4","LOQ","YES","-99","","258.4","0.50","1.9",""
"TP-PFC-019-TPE-D", "537 (Modified)", "RES", "320-29732-4", "TALSAC", "335-76-2", "Perfluorodecanoic acid
(PFDA)","0.97","ng/L","U","0.43","DL","","TRG","","","2.4","LOQ","YES","-99","","258.4","0.50","0.97",""
"TP-PFC-019-TPE-D","537 (Modified)","RES","320-29732-4","TALSAC","335-77-3","Perfluorodecanesulfonic acid (PFDS)","2.9","ng/L","U","1.2","DL","","TRG","","1.2","LOQ","YES","-99","","258.4","0.50","2.9",""
"TP-PFC-019-TPE-D","537 (Modified)","RES","320-29732-4","TALSAC","355-46-4","Perfluorohexanesulfonic acid (PFHxS)","1.9","ng/L","U","0.84","DL","","TRG","","1.9","LOQ","YES","-99","","258.4","0.50","1.9",""
"TP-PFC-019-TPE-D", "537 (Modified)", "RES", "320-29732-4", "TALSAC", "375-22-4", "Perfluorobutanoic acid
(PFBA)","82","ng/L","","0.44","DL","","TRG","","","2.4","LOQ","YES","-99","","258.4","0.50","0.97",""
"TP-PFC-019-TPE-D", "537 (Modified)", "RES", "320-29732-4", "TALSAC", "375-73-5", "Perfluorobutanesulfonic acid
(PFBS)","1.9","ng/L","U","0.89","DL","","TRG","","","2.4","LOQ","YES","-99","","258.4","0.50","1.9",""
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"TP-PFC-019-TPE-D", "537 (Modified)", "RES", "320-29732-4", "TALSAC", "375-85-9", "Perfluoroheptanoic acid
(PFHpA)","1.9","ng/L","U","0.78","DL","","TRG","","","2.4","LOQ","YES","-99","","258.4","0.50","1.9",""
"TP-PFC-019-TPE-D", "537 (Modified)", "RES", "320-29732-4", "TALSAC", "375-92-8", "Perfluoroheptanesulfonic Acid
(PFHpS)","1.9","ng/L","U","0.69","DL","","TRG","","","2.4","LOQ","YES","-99","","258.4","0.50","1.9",""
"TP-PFC-019-TPE-D", "537 (Modified)", "RES", "320-29732-4", "TALSAC", "375-95-1", "Perfluorononanoic acid
(PFNA)","1.9","ng/L","U","0.63","DL","","TRG","","","2.4","LOQ","YES","-99","","258.4","0.50","1.9",""
"TP-PFC-019-TPE-D", "537 (Modified)", "RES", "320-29732-4", "TALSAC", "376-06-7", "Perfluorotetradecanoic acid
(PFTeA)","0.97","ng/L","U","0.39","DL","","TRG","","","2.4","LOQ","YES","-99","","258.4","0.50","0.97",""
"TP-PFC-019-TPE-D", "537 (Modified)", "RES", "320-29732-4", "TALSAC", "72629-94-8", "Perfluorotridecanoic Acid
(PFTriA)","1.9","ng/L","U","0.53","DL","","TRG","","","2.4","LOQ","YES","-99","","258.4","0.50","1.9",""
"TP-PFC-019-TPE-D", "537 (Modified)", "RES", "320-29732-4", "TALSAC", "754-91-6", "Perfluorooctane Sulfonamide"
(FOSA)","1.9","ng/L","U","0.62","DL","","TRG","","","39","LOQ","YES","-99","","258.4","0.50","1.9",""
"TP-PFC-019-TPE-D","537 (Modified)","RES","320-29732-4","TALSAC","STL00990","13C4
PFOA","110","ng/L","","-99","DL","","TRG","111","","-99","LOQ","YES","96.7","","258.4","0.50","97",""
"TP-PFC-019-TPE-D", "537 (Modified)", "RES", "320-29732-4", "TALSAC", "STL00991", "13C4
PFOS","93","ng/L","","-99","DL","","TRG","100","","-99","LOQ","YES","92.5","","258.4","0.50","97",""
"TP-PFC-019-TPE-D", "537 (Modified)", "RES", "320-29732-4", "TALSAC", "STL00992", "13C4
PFBA","93","ng/L","","-99","DL","","TRG","96","","-99","LOQ","YES","96.7","","258.4","0.50","97",""
"TP-PFC-019-TPE-D", "537 (Modified)", "RES", "320-29732-4", "TALSAC", "STL00993", "13C2
PFHxA","95","ng/L","","-99","DL","","TRG","98","","-99","LOQ","YES","96.7","","258.4","0.50","97",""
"TP-PFC-019-TPE-D", "537 (Modified)", "RES", "320-29732-4", "TALSAC", "STL00994", "1802
PFHxS","97","ng/L","","-99","DL","","TRG","106","","-99","LOQ","YES","91.5","","258.4","0.50","97",""
"TP-PFC-019-TPE-D", "537 (Modified)", "RES", "320-29732-4", "TALSAC", "STL00995", "13C5
PFNA", "88", "ng/L", "", "-99", "DL", "", "TRG", "91", "", "-99", "LOQ", "YES", "96.7", "", "258.4", "0.50", "97", ""
"TP-PFC-019-TPE-D", "537 (Modified)", "RES", "320-29732-4", "TALSAC", "STL00996", "13C2
PFDA", "82", "ng/L", "", "-99", "DL", "", "TRG", "85", "", "-99", "LOQ", "YES", "96.7", "", "258.4", "0.50", "97", ""
"TP-PFC-019-TPE-D", "537 (Modified)", "RES", "320-29732-4", "TALSAC", "STL00997", "13C2
PFUnA","64","ng/L","","-99","DL","","TRG","67","","-99","LOQ","YES","96.7","","258.4","0.50","97",""
"TP-PFC-019-TPE-D", "537 (Modified)", "RES", "320-29732-4", "TALSAC", "STL00998", "13C2
PFDoA","68","ng/L","","-99","DL","","TRG","70","","-99","LOQ","YES","96.7","","258.4","0.50","97",""
"TP-PFC-019-TPE-D", "537 (Modified)", "RES", "320-29732-4", "TALSAC", "STL01056", "13C8
FOSA","0.31","ng/L","Q","-99","DL","","TRG","0.3","","-99","LOQ","YES","96.7","","258.4","0.50","97",""
"TP-PFC-019-TPE-D","537 (Modified)","RES","320-29732-4","TALSAC","STL01892","13C4-
PFHpA","110","ng/L","","-99","DL","","TRG","118","","-99","LOQ","YES","96.7","","258.4","0.50","97",""
"TP-PFC-019-TPE-D","537 (Modified)","RES","320-29732-4","TALSAC","STL01893","13C5
PFPeA","95","ng/L","","-99","DL","","TRG","98","","-99","LOQ","YES","96.7","","258.4","0.50","97",""
"LCS 320-174599/2-A", "537 (Modified)", "RES", "LCS 320-174599/2-A", "TALSAC", "1763-23-
1","Perfluorooctanesulfonic acid
(PFOS)","40.0","ng/L","","1.3","DL","","SPK","108","","4.0","LOQ","YES","37.1","","250","0.50","3.0",""
"LCS 320-174599/2-A", "537 (Modified)", "RES", "LCS 320-174599/2-A", "TALSAC", "2058-94-
8", "Perfluoroundecanoic acid
(PFUnA)","43.8","ng/L","","0.75","DL","","SPK","109","","2.5","LOQ","YES","40.0","","250","0.50","2.0",""
"LCS 320-174599/2-A", "537 (Modified)", "RES", "LCS 320-174599/2-A", "TALSAC", "2706-90-3", "Perfluoropentanoic
acid (PFPeA)","42.2","ng/L","","0.99","DL","","SPK","106","","2.5","LOQ","YES","40.0","","250","0.50","2.0",""
"LCS 320-174599/2-A", "537 (Modified)", "RES", "LCS 320-174599/2-A", "TALSAC", "307-24-4", "Perfluorohexanoic
acid (PFHxA)","42.7","ng/L","","0.79","DL","","SPK","107","","2.5","LOQ","YES","40.0","","250","0.50","2.0",""
"LCS 320-174599/2-A", "537 (Modified)", "RES", "LCS 320-174599/2-A", "TALSAC", "307-55-1", "Perfluorododecanoic
acid (PFDoA)","43.5","ng/L","","0.58","DL","","SPK","109","","2.5","LOQ","YES","40.0","","250","0.50","2.0",""
"LCS 320-174599/2-A", "537 (Modified)", "RES", "LCS 320-174599/2-A", "TALSAC", "335-67-1", "Perfluorooctanoic
acid (PFOA)","42.1","ng/L","","0.75","DL","","SPK","105","","2.5","LOQ","YES","40.0","","250","0.50","2.0",""
"LCS 320-174599/2-A", "537 (Modified)", "RES", "LCS 320-174599/2-A", "TALSAC", "335-76-2", "Perfluorodecanoic
acid (PFDA)","43.8","ng/L","","0.44","DL","","SPK","110","","2.5","LOQ","YES","40.0","","250","0.50","1.0",""
"LCS 320-174599/2-A", "537 (Modified)", "RES", "LCS 320-174599/2-A", "TALSAC", "335-77-
3", "Perfluorodecanesulfonic acid
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(PFDS)","39.6","ng/L","","1.2","DL","","SPK","103","","4.0","LOQ","YES","38.6","","250","0.50","3.0",""
"LCS 320-174599/2-A", "537 (Modified)", "RES", "LCS 320-174599/2-A", "TALSAC", "355-46-
4","Perfluorohexanesulfonic acid
(PFHxS)","38.9","ng/L","","0.87","DL","","SPK","107","","2.5","LOQ","YES","36.4","","250","0.50","2.0",""
"LCS 320-174599/2-A", "537 (Modified)", "RES", "LCS 320-174599/2-A", "TALSAC", "375-22-4", "Perfluorobutanoic
acid (PFBA)","44.8","ng/L","","0.46","DL","","SPK","112","","2.5","LOQ","YES","40.0","","250","0.50","1.0",""
"LCS 320-174599/2-A", "537 (Modified)", "RES", "LCS 320-174599/2-A", "TALSAC", "375-73-
5"."Perfluorobutanesulfonic acid
(PFBS)","38.5","ng/L","","0.92","DL","","SPK","109","","2.5","LOQ","YES","35.4","","250","0.50","2.0",""
"LCS 320-174599/2-A", "537 (Modified)", "RES", "LCS 320-174599/2-A", "TALSAC", "375-85-9", "Perfluoroheptanoic
acid (PFHpA)","40.6","ng/L","","0.80","DL","","SPK","102","","2.5","LOQ","YES","40.0","","250","0.50","2.0",""
"LCS 320-174599/2-A", "537 (Modified)", "RES", "LCS 320-174599/2-A", "TALSAC", "375-92-
8", "Perfluoroheptanesulfonic Acid
(PFHpS)","44.7","ng/L","","0.71","DL","","SPK","117","","2.5","LOQ","YES","38.1","","250","0.50","2.0",""
"LCS 320-174599/2-A", "537 (Modified)", "RES", "LCS 320-174599/2-A", "TALSAC", "375-95-1", "Perfluorononanoic
acid (PFNA)","42.6","ng/L","","0.65","DL","","SPK","106","","2.5","LOQ","YES","40.0","","250","0.50","2.0",""
"LCS 320-174599/2-A", "537 (Modified)", "RES", "LCS 320-174599/2-A", "TALSAC", "376-06-
7"."Perfluorotetradecanoic acid
(PFTeA)","48.6","ng/L","","0.40","DL","","SPK","122","","2.5","LOQ","YES","40.0","","250","0.50","1.0",""
"LCS 320-174599/2-A", "537 (Modified)", "RES", "LCS 320-174599/2-A", "TALSAC", "72629-94-
8", "Perfluorotridecanoic Acid
(PFTriA)","43.4","ng/L","","0.55","DL","","SPK","109","","2.5","LOQ","YES","40.0","","250","0.50","2.0",""
"LCS 320-174599/2-A", "537 (Modified)", "RES", "LCS 320-174599/2-A", "TALSAC", "754-91-6", "Perfluorooctane
Sulfonamide
(FOSA)", "42.9", "ng/L", "", "0.64", "DL", "", "SPK", "107", "", "40", "LOQ", "YES", "40.0", "", "250", "0.50", "2.0", "", "107", "", "107", "", "107", "", "107", "", "107", "", "107", "", "107", "", "107", "", "107", "", "107", "", "107", "", "107", "", "107", "", "107", "", "107", "", "107", "", "107", "", "107", "", "107", "", "107", "", "107", "", "107", "", "107", "", "107", "", "107", "", "107", "", "107", "", "107", "", "107", "", "107", "", "107", "", "107", "", "107", "", "107", "", "107", "", "107", "", "107", "", "107", "", "107", "", "107", "", "107", "", "107", "", "107", "", "107", "", "107", "", "107", "", "107", "", "107", "", "107", "", "107", "", "107", "", "107", "", "107", "", "107", "", "107", "", "107", "", "107", "", "107", "", "107", "", "107", "", "107", "", "107", "", "107", "", "107", "", "107", "", "107", "", "107", "", "107", "", "107", "", "107", "", "107", "", "107", "", "107", "", "107", "", "107", "", "107", "", "107", "", "107", "", "107", "", "107", "", "107", "", "107", "", "107", "", "107", "", "107", "", "107", "", "107", "", "107", "", "107", "", "107", "", "107", "", "107", "", "107", "", "107", "", "107", "", "107", "", "107", "", "107", "", "107", "", "107", "", "107", "", "107", "", "107", "", "107", "", "107", "", "107", "", "107", "", "107", "", "107", "", "107", "", "107", "", "107", "", "107", "", "107", "", "107", "", "107", "", "107", "", "107", "", "107", "", "107", "", "107", "", "107", "", "107", "", "107", "", "107", "", "107", "", "107", "", "107", "", "107", "", "107", "", "107", "", "107", "", "107", "", "107", "", "107", "", "107", "", "107", "", "107", "", "107", "", "107", "", "107", "", "107", "", "107", "", "107", "", "107", "", "107", "", "107", "", "107", "", "107", "", "107", "", "107", "", "107", "", "107", "", "107", "", "107", "", "107", "", "107", "", "107", "", "107", "", "107", "", "107", "", "107", "", "107", "", "107", "", "107", "", "107", "", "107", "", "107", "", "107", ", "", "107", "", "107", "", "", "107", "", "107", "", "", "107", 
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PFOA","119","ng/L","","-99","DL","","SPK","119","","-99","LOQ","YES","100","","250","0.50","100",""
"LCS 320-174599/2-A", "537 (Modified)", "RES", "LCS 320-174599/2-A", "TALSAC", "STL00991", "13C4
PFOS","89.3","ng/L","","-99","DL","","SPK","93","","-99","LOQ","YES","95.6","","250","0.50","100",""
"LCS 320-174599/2-A", "537 (Modified)", "RES", "LCS 320-174599/2-A", "TALSAC", "STL00992", "13C4
PFBA","99.7","ng/L","","-99","DL","","SPK","100","","-99","LOQ","YES","100","","250","0.50","100",""
"LCS 320-174599/2-A", "537 (Modified)", "RES", "LCS 320-174599/2-A", "TALSAC", "STL00993", "13C2
PFHxA","102","ng/L","","-99","DL","","SPK","102","","-99","LOQ","YES","100","","250","0.50","100",""
"LCS 320-174599/2-A", "537 (Modified)", "RES", "LCS 320-174599/2-A", "TALSAC", "STL00994", "1802
PFHxS", "91.8", "ng/L", "", "-99", "DL", "", "SPK", "97", "", "-99", "LOQ", "YES", "94.6", "", "250", "0.50", "100", ""
"LCS 320-174599/2-A", "537 (Modified)", "RES", "LCS 320-174599/2-A", "TALSAC", "STL00995", "13C5
PFNA","109","ng/L","","-99","DL","","SPK","109","","-99","LOQ","YES","100","","250","0.50","100",""
"LCS 320-174599/2-A", "537 (Modified)", "RES", "LCS 320-174599/2-A", "TALSAC", "STL00996", "13C2
PFDA","126","ng/L","","-99","DL","","SPK","126","","-99","LOQ","YES","100","","250","0.50","100",""
"LCS 320-174599/2-A", "537 (Modified)", "RES", "LCS 320-174599/2-A", "TALSAC", "STL00997", "13C2
PFUnA","110","ng/L","","-99","DL","","SPK","110","","-99","LOQ","YES","100","","250","0.50","100",""
"LCS 320-174599/2-A", "537 (Modified)", "RES", "LCS 320-174599/2-A", "TALSAC", "STL00998", "13C2
PFDoA","96.6","ng/L","","-99","DL","","SPK","97","","-99","LOQ","YES","100","","250","0.50","100",""
"LCS 320-174599/2-A", "537 (Modified)", "RES", "LCS 320-174599/2-A", "TALSAC", "STL01056", "13C8
FOSA","17.3","ng/L","Q","-99","DL","","SPK","17","","-99","LOQ","YES","100","","250","0.50","100",""
"LCS 320-174599/2-A", "537 (Modified)", "RES", "LCS 320-174599/2-A", "TALSAC", "STL01892", "13C4-
PFHpA","135","ng/L","","-99","DL","","SPK","135","","-99","LOQ","YES","100","","250","0.50","100",""
"LCS 320-174599/2-A", "537 (Modified)", "RES", "LCS 320-174599/2-A", "TALSAC", "STL01893", "13C5
PFPeA","101","ng/L","","-99","DL","","SPK","101","","-99","LOQ","YES","100","","250","0.50","100",""
"LCS 320-175074/2-A", "537 (Modified)", "RES", "LCS 320-175074/2-A", "TALSAC", "376-06-
7", "Perfluorotetradecanoic acid
(PFTeA)","58.6","ng/L","","0.40","DL","","SPK","146","","2.5","LOQ","YES","40.0","","250.00","0.50","1.0",""
"LCS 320-175074/2-A", "537 (Modified)", "RES", "LCS 320-175074/2-A", "TALSAC", "STL00998", "13C2
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1"."Perfluorooctanesulfonic acid
(PFOS)", "38.2", "ng/L", "", "1.3", "DL", "", "SPK", "103", "", "4.0", "LOQ", "YES", "37.1", "", "250", "0.50", "3.0", ""
"LCS 320-175097/2-A", "537 (Modified)", "RES", "LCS 320-175097/2-A", "TALSAC", "2058-94-
8"."Perfluoroundecanoic acid
(PFUnA)", "41.4", "ng/L", "", "0.75", "DL", "", "SPK", "104", "", "2.5", "LOQ", "YES", "40.0", "", "250", "0.50", "2.0", ""
"LCS 320-175097/2-A", "537 (Modified)", "RES", "LCS 320-175097/2-A", "TALSAC", "2706-90-3", "Perfluoropentanoic
acid (PFPeA)","40.4","ng/L","","0.99","DL","","SPK","101","","2.5","LOQ","YES","40.0","","250","0.50","2.0",""
"LCS 320-175097/2-A", "537 (Modified)", "RES", "LCS 320-175097/2-A", "TALSAC", "307-24-4", "Perfluorohexanoic
acid (PFHxA)", "41.9", "ng/L", "", "0.79", "DL", "", "SPK", "105", "", "2.5", "LOQ", "YES", "40.0", "", "250", "0.50", "2.0", ""
"LCS 320-175097/2-A", "537 (Modified)", "RES", "LCS 320-175097/2-A", "TALSAC", "307-55-1", "Perfluorododecanoic
acid (PFDoA)","46.3","ng/L","","0.58","DL","","SPK","116","","2.5","LOQ","YES","40.0","","250","0.50","2.0",""
"LCS 320-175097/2-A", "537 (Modified)", "RES", "LCS 320-175097/2-A", "TALSAC", "335-67-1", "Perfluorooctanoic
acid (PFOA)","39.8","ng/L","","0.75","DL","","SPK","100","","2.5","LOQ","YES","40.0","","250","0.50","2.0",""
"LCS 320-175097/2-A", "537 (Modified)", "RES", "LCS 320-175097/2-A", "TALSAC", "335-76-2", "Perfluorodecanoic
acid (PFDA)","42.6","ng/L","","0.44","DL","","SPK","107","","2.5","LOQ","YES","40.0","","250","0.50","1.0",""
"LCS 320-175097/2-A", "537 (Modified)", "RES", "LCS 320-175097/2-A", "TALSAC", "335-77-
3", "Perfluorodecanesulfonic acid
(PFDS)","42.5","ng/L","","1.2","DL","","SPK","110","","4.0","LOQ","YES","38.6","","250","0.50","3.0",""
"LCS 320-175097/2-A", "537 (Modified)", "RES", "LCS 320-175097/2-A", "TALSAC", "355-46-
4","Perfluorohexanesulfonic acid
(PFHxS)","35.8","ng/L","","0.87","DL","","SPK","98","","2.5","LOQ","YES","36.4","","250","0.50","2.0",""
"LCS 320-175097/2-A", "537 (Modified)", "RES", "LCS 320-175097/2-A", "TALSAC", "375-22-4", "Perfluorobutanoic
acid (PFBA)", "43.9", "ng/L", "", "0.46", "DL", "", "SPK", "110", "", "2.5", "LOQ", "YES", "40.0", "", "250", "0.50", "1.0", ""
"LCS 320-175097/2-A", "537 (Modified)", "RES", "LCS 320-175097/2-A", "TALSAC", "375-73-
5"."Perfluorobutanesulfonic acid
(PFBS)","39.2","ng/L","","0.92","DL","","SPK","111","","2.5","LOQ","YES","35.4","","250","0.50","2.0",""
"LCS 320-175097/2-A", "537 (Modified)", "RES", "LCS 320-175097/2-A", "TALSAC", "375-85-9", "Perfluoroheptanoic
acid (PFHpA)","42.1","ng/L","","0.80","DL","","SPK","105","","2.5","LOQ","YES","40.0","","250","0.50","2.0",""
"LCS 320-175097/2-A", "537 (Modified)", "RES", "LCS 320-175097/2-A", "TALSAC", "375-92-
8"."Perfluoroheptanesulfonic Acid
(PFHpS)","44.5","ng/L","","0.71","DL","","SPK","117","","2.5","LOQ","YES","38.1","","250","0.50","2.0",""
"LCS 320-175097/2-A", "537 (Modified)", "RES", "LCS 320-175097/2-A", "TALSAC", "375-95-1", "Perfluorononanoic
acid (PFNA)","42.2","ng/L","","0.65","DL","","SPK","105","","2.5","LOQ","YES","40.0","","250","0.50","2.0",""
"LCS 320-175097/2-A", "537 (Modified)", "RES", "LCS 320-175097/2-A", "TALSAC", "72629-94-
8", "Perfluorotridecanoic Acid
(PFTriA)","54.0","ng/L","","0.55","DL","","SPK","135","","2.5","LOQ","YES","40.0","","250","0.50","2.0",""
"LCS 320-175097/2-A", "537 (Modified)", "RES", "LCS 320-175097/2-A", "TALSAC", "754-91-6", "Perfluorooctane
Sulfonamide
(FOSA)","43.1","ng/L","","0.64","DL","","SPK","108","","40","LOQ","YES","40.0","","250","0.50","2.0",""
"LCS 320-175097/2-A", "537 (Modified)", "RES", "LCS 320-175097/2-A", "TALSAC", "STL00990", "13C4
PFOA","113","ng/L","","-99","DL","","SPK","113","","-99","LOQ","YES","100","","250","0.50","100",""
"LCS 320-175097/2-A", "537 (Modified)", "RES", "LCS 320-175097/2-A", "TALSAC", "STL00991", "13C4
PFOS", "89.9", "ng/L", "", "-99", "DL", "", "SPK", "94", "", "-99", "LOQ", "YES", "95.6", "", "250", "0.50", "100", ""
"LCS 320-175097/2-A", "537 (Modified)", "RES", "LCS 320-175097/2-A", "TALSAC", "STL00992", "13C4
PFBA","101","ng/L","","-99","DL","","SPK","101","","-99","LOQ","YES","100","","250","0.50","100",""
"LCS 320-175097/2-A", "537 (Modified)", "RES", "LCS 320-175097/2-A", "TALSAC", "STL00993", "13C2
PFHxA","100","ng/L","","-99","DL","","SPK","100","","-99","LOQ","YES","100","","250","0.50","100",""
"LCS 320-175097/2-A", "537 (Modified)", "RES", "LCS 320-175097/2-A", "TALSAC", "STL00994", "18O2
PFHxS","95.7","ng/L","","-99","DL","","SPK","101","","-99","LOQ","YES","94.6","","250","0.50","100",""
"LCS 320-175097/2-A", "537 (Modified)", "RES", "LCS 320-175097/2-A", "TALSAC", "STL00995", "13C5
PFNA","97.6","ng/L","","-99","DL","","SPK","98","","-99","LOQ","YES","100","","250","0.50","100",""
"LCS 320-175097/2-A", "537 (Modified)", "RES", "LCS 320-175097/2-A", "TALSAC", "STL00996", "13C2
PFDA","120","ng/L","","-99","DL","","SPK","120","","-99","LOQ","YES","100","","250","0.50","100",""
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"LCS 320-175097/2-A", "537 (Modified)", "RES", "LCS 320-175097/2-A", "TALSAC", "1763-23-

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"LCS 320-175097/2-A", "537 (Modified)", "RES", "LCS 320-175097/2-A", "TALSAC", "STL00997", "13C2
PFUnA","104","ng/L","","-99","DL","","SPK","104","","-99","LOQ","YES","100","","250","0.50","100",""
"LCS 320-175097/2-A", "537 (Modified)", "RES", "LCS 320-175097/2-A", "TALSAC", "STL00998", "13C2
PFDoA","85.8","ng/L","","-99","DL","","SPK","86","","-99","LOQ","YES","100","","250","0.50","100",""
"LCS 320-175097/2-A", "537 (Modified)", "RES", "LCS 320-175097/2-A", "TALSAC", "STL01056", "13C8
FOSA", "6.86", "ng/L", "Q", "-99", "DL", "", "SPK", "7", "", "-99", "LOQ", "YES", "100", "", "250", "0.50", "100", ""
"LCS 320-175097/2-A", "537 (Modified)", "RES", "LCS 320-175097/2-A", "TALSAC", "STL01892", "13C4-
PFHpA","119","ng/L","","-99","DL","","SPK","119","","-99","LOQ","YES","100","","250","0.50","100",""
"LCS 320-175097/2-A", "537 (Modified)", "RES", "LCS 320-175097/2-A", "TALSAC", "STL01893", "13C5
PFPeA","102","ng/L","","-99","DL","","SPK","102","","-99","LOQ","YES","100","","250","0.50","100",""
"LCS 320-175742/2-A", "537 (Modified)", "RES", "LCS 320-175742/2-A", "TALSAC", "754-91-6", "Perfluorooctane"
Sulfonamide
(FOSA)","44.4","ng/L","","0.64","DL","","SPK","111","","40","LOQ","YES","40.0","","250.00","0.50","2.0",""
"LCS 320-175742/2-A", "537 (Modified)", "RES", "LCS 320-175742/2-A", "TALSAC", "STL01056", "13C8
FOSA", "62.0", "ng/L", "", "-99", "DL", "", "SPK", "62", "", "-99", "LOQ", "YES", "100", "", "250.00", "0.50", "100", ""
"LCSD 320-174599/3-A", "537 (Modified)", "RES", "LCSD 320-174599/3-A", "TALSAC", "1763-23-
1","Perfluorooctanesulfonic acid
(PFOS)","39.2","ng/L","","1.3","DL","","SPK","106","2","4.0","LOQ","YES","37.1","LCS 320-174599/2-
A","250","0.50","3.0",""
"LCSD 320-174599/3-A", "537 (Modified)", "RES", "LCSD 320-174599/3-A", "TALSAC", "2058-94-
8", "Perfluoroundecanoic acid
(PFUnA)","40.6","ng/L","","0.75","DL","","SPK","101","8","2.5","LOQ","YES","40.0","LCS 320-174599/2-
A","250","0.50","2.0",""
"LCSD 320-174599/3-A", "537 (Modified)", "RES", "LCSD 320-174599/3-A", "TALSAC", "2706-90-
3","Perfluoropentanoic acid
(PFPeA)","43.9","ng/L","","0.99","DL","","SPK","110","4","2.5","LOQ","YES","40.0","LCS 320-174599/2-
A","250","0.50","2.0",""
"LCSD 320-174599/3-A", "537 (Modified)", "RES", "LCSD 320-174599/3-A", "TALSAC", "307-24-
4"."Perfluorohexanoic acid
(PFHxA)","42.9","ng/L","","0.79","DL","","SPK","107","0","2.5","LOQ","YES","40.0","LCS 320-174599/2-
A","250","0.50","2.0",""
"LCSD 320-174599/3-A", "537 (Modified)", "RES", "LCSD 320-174599/3-A", "TALSAC", "307-55-
1"."Perfluorododecanoic acid
(PFDoA)","43.8","ng/L","","0.58","DL","","SPK","109","1","2.5","LOQ","YES","40.0","LCS 320-174599/2-
A","250","0.50","2.0",""
"LCSD 320-174599/3-A", "537 (Modified)", "RES", "LCSD 320-174599/3-A", "TALSAC", "335-67-
1"."Perfluorooctanoic acid
(PFOA)","42.9","ng/L","","0.75","DL","","SPK","107","2","2.5","LOQ","YES","40.0","LCS 320-174599/2-
A","250","0.50","2.0",""
"LCSD 320-174599/3-A", "537 (Modified)", "RES", "LCSD 320-174599/3-A", "TALSAC", "335-76-
2", "Perfluorodecanoic acid
(PFDA)","42.5","ng/L","","0.44","DL","","SPK","106","3","2.5","LOQ","YES","40.0","LCS 320-174599/2-
A","250","0.50","1.0",""
"LCSD 320-174599/3-A", "537 (Modified)", "RES", "LCSD 320-174599/3-A", "TALSAC", "335-77-
3", "Perfluorodecanesulfonic acid
(PFDS)","38.4","ng/L","","1.2","DL","","SPK","100","3","4.0","LOQ","YES","38.6","LCS 320-174599/2-
A","250","0.50","3.0",""
"LCSD 320-174599/3-A", "537 (Modified)", "RES", "LCSD 320-174599/3-A", "TALSAC", "355-46-
4","Perfluorohexanesulfonic acid
(PFHxS)","38.5","ng/L","","0.87","DL","","SPK","106","1","2.5","LOQ","YES","36.4","LCS 320-174599/2-
A","250","0.50","2.0",""
"LCSD 320-174599/3-A", "537 (Modified)", "RES", "LCSD 320-174599/3-A", "TALSAC", "375-22-
4"."Perfluorobutanoic acid
(PFBA)","47.2","ng/L","","0.46","DL","","SPK","118","5","2.5","LOQ","YES","40.0","LCS 320-174599/2-
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A","250","0.50","1.0",""
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- "LCSD 320-174599/3-A", "537 (Modified)", "RES", "LCSD 320-174599/3-A", "TALSAC", "375-73-
- 5","Perfluorobutanesulfonic acid
- (PFBS)", "37.4", "ng/L", "", "0.92", "DL", "", "SPK", "106", "3", "2.5", "LOQ", "YES", "35.4", "LCS 320-174599/2-A", "250", "0.50", "2.0", ""
- "LCSD 320-174599/3-A", "537 (Modified)", "RES", "LCSD 320-174599/3-A", "TALSAC", "375-85-
- 9","Perfluoroheptanoic acid
- (PFHpA)","43.3","ng/L","","0.80","DL","","SPK","108","6","2.5","LOQ","YES","40.0","LCS 320-174599/2-A","250","0.50","2.0",""
- "LCSD 320-174599/3-A", "537 (Modified)", "RES", "LCSD 320-174599/3-A", "TALSAC", "375-92-
- 8","Perfluoroheptanesulfonic Acid
- (PFHpS)","41.6","ng/L","","0.71","DL","","SPK","109","7","2.5","LOQ","YES","38.1","LCS 320-174599/2-A","250","0.50","2.0",""
- "LCSD 320-174599/3-A", "537 (Modified)", "RES", "LCSD 320-174599/3-A", "TALSAC", "375-95-1". "Perfluorononanoic acid
- (PFNA)","42.8","ng/L","","0.65","DL","","SPK","107","1","2.5","LOQ","YES","40.0","LCS 320-174599/2-A","250","0.50","2.0",""
- "LCSD 320-174599/3-A","537 (Modified)","RES","LCSD 320-174599/3-A","TALSAC","376-06-7","Perfluorotetradecanoic acid
- (PFTeA)","49.4","ng/L","","0.40","DL","","SPK","123","2","2.5","LOQ","YES","40.0","LCS 320-174599/2-A","250","0.50","1.0",""
- "LCSD 320-174599/3-A", "537 (Modified)", "RES", "LCSD 320-174599/3-A", "TALSAC", "72629-94-8", "Perfluorotridecanoic Acid
- (PFTriA)","46.6","ng/L","","0.55","DL","","SPK","117","7","2.5","LOQ","YES","40.0","LCS 320-174599/2-A","250","0.50","2.0",""
- "LCSD 320-174599/3-A", "537 (Modified)", "RES", "LCSD 320-174599/3-A", "TALSAC", "754-91-6", "Perfluorooctane Sulfonamide (FOSA)", "43.3", "ng/L", "", "0.64", "DL", "", "SPK", "108", "1", "40", "LOQ", "YES", "40.0", "LCS 320-174599/2-A", "250", "0.50", "2.0", ""
- "LCSD 320-174599/3-A","537 (Modified)","RES","LCSD 320-174599/3-A","TALSAC","STL00990","13C4 PFOA","125","ng/L","","-99","DL","","SPK","125","","-99","LOQ","YES","100","LCS 320-174599/2-A","250","0.50","100",""
- "LCSD 320-174599/3-A", "537 (Modified)", "RES", "LCSD 320-174599/3-A", "TALSAC", "STL00991", "13C4 PFOS", "91.5", "ng/L", "", "-99", "DL", "", "SPK", "96", "", "-99", "LOQ", "YES", "95.6", "LCS 320-174599/2-A", "250", "0.50", "100", ""
- "LCSD 320-174599/3-A","537 (Modified)","RES","LCSD 320-174599/3-A","TALSAC","STL00992","13C4 PFBA","97.0","ng/L","","-99","DL","","SPK","97","","-99","LOQ","YES","100","LCS 320-174599/2-A","250","0.50","100",""
- "LCSD 320-174599/3-A","537 (Modified)","RES","LCSD 320-174599/3-A","TALSAC","STL00993","13C2 PFHxA","105","ng/L","","-99","DL","","SPK","105","","-99","LOQ","YES","100","LCS 320-174599/2-A","250","0.50","100",""
- "LCSD 320-174599/3-A", "537 (Modified)", "RES", "LCSD 320-174599/3-A", "TALSAC", "STL00994", "1802 PFHxS", "92.2", "ng/L", "", "-99", "DL", "", "SPK", "97", "", "-99", "LOQ", "YES", "94.6", "LCS 320-174599/2-A", "250", "0.50", "100", ""
- "LCSD 320-174599/3-A", "537 (Modified)", "RES", "LCSD 320-174599/3-A", "TALSAC", "STL00995", "13C5 PFNA", "111", "ng/L", "", "-99", "DL", "", "SPK", "111", "", "-99", "LOQ", "YES", "100", "LCS 320-174599/2-A", "250", "0.50", "100", ""
- "LCSD 320-174599/3-A", "537 (Modified)", "RES", "LCSD 320-174599/3-A", "TALSAC", "STL00996", "13C2 PFDA", "128", "ng/L", "", "-99", "DL", "", "SPK", "128", "", "-99", "LOQ", "YES", "100", "LCS 320-174599/2-A", "250", "0.50", "100", ""
- "LCSD 320-174599/3-A", "537 (Modified)", "RES", "LCSD 320-174599/3-A", "TALSAC", "STL00997", "13C2 PFUnA", "117", "ng/L", "", "-99", "DL", "", "SPK", "117", "", "-99", "LOQ", "YES", "100", "LCS 320-174599/2-A", "250", "0.50", "100", ""
- "LCSD 320-174599/3-A", "537 (Modified)", "RES", "LCSD 320-174599/3-A", "TALSAC", "STL00998", "13C2 PFDoA", "101", "ng/L", "", "-99", "DL", "", "SPK", "101", "", "-99", "LOQ", "YES", "100", "LCS 320-174599/2-

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A","250","0.50","100",""
"LCSD 320-174599/3-A", "537 (Modified)", "RES", "LCSD 320-174599/3-A", "TALSAC", "STL01056", "13C8
FOSA","20.3","ng/L","Q","-99","DL","","SPK","20","","-99","LOQ","YES","100","LCS 320-174599/2-
A","250","0.50","100",""
"LCSD 320-174599/3-A", "537 (Modified)", "RES", "LCSD 320-174599/3-A", "TALSAC", "STL01892", "13C4-
PFHpA","132","ng/L","","-99","DL","","SPK","132","","-99","LOQ","YES","100","LCS 320-174599/2-
A","250","0.50","100",""
"LCSD 320-174599/3-A", "537 (Modified)", "RES", "LCSD 320-174599/3-A", "TALSAC", "STL01893", "13C5"
PFPeA","101","ng/L","","-99","DL","","SPK","101","","-99","LOQ","YES","100","LCS 320-174599/2-
A","250","0.50","100",""
"LCSD 320-175074/3-A", "537 (Modified)", "RES", "LCSD 320-175074/3-A", "TALSAC", "376-06-
7", "Perfluorotetradecanoic acid
(PFTeA)", "64.6", "ng/L", "Q", "0.40", "DL", "", "SPK", "162", "10", "2.5", "LOQ", "YES", "40.0", "LCS 320-175074/2-
A","250.00","0.50","1.0",""
"LCSD\ 320-175074/3-A","537\ (Modified)","RES","LCSD\ 320-175074/3-A","TALSAC","STL00998","13C2-175074/3-A","CSD\ 320-175074/3-A","TALSAC","STL00998","13C2-175074/3-A","CSD\ 320-175074/3-A","TALSAC","STL00998","13C2-175074/3-A","TALSAC","STL00998","13C2-175074/3-A","TALSAC","STL00998","13C2-175074/3-A","TALSAC","STL00998","13C2-175074/3-A","TALSAC","STL00998","13C2-175074/3-A","TALSAC","STL00998","13C2-175074/3-A","TALSAC","STL00998","13C2-175074/3-A","TALSAC","STL00998","13C2-175074/3-A","TALSAC","STL00998","13C2-175074/3-A","STL00998","13C2-175074/3-A","STL00998","13C2-175074/3-A","STL00998","13C2-175074/3-A","STL00998","13C2-175074/3-A","STL00998","13C2-175074/3-A","STL00998","13C2-175074/3-A","STL00998","13C2-175074/3-A","STL00998","13C2-175074/3-A","STL00998","13C2-175074/3-A","STL00998","13C2-175074/3-A","STL00998","13C2-175074/3-A","STL00998-A","STL00998-A","STL00998-A","STL00998-A","STL00998-A","STL00998-A","STL00998-A","STL00998-A","STL00998-A","STL00998-A","STL00998-A","STL00998-A","STL00998-A","STL00998-A","STL00998-A","STL00998-A","STL00998-A","STL00998-A","STL00998-A","STL00998-A","STL00998-A","STL00998-A","STL00998-A","STL0098-A","STL0098-A","STL0098-A","STL0098-A","STL0098-A","STL0098-A","STL0098-A","STL0098-A","STL0098-A","STL0098-A","STL0098-A","STL0098-A","STL0098-A","STL0098-A","STL0098-A","STL0098-A","STL0098-A","STL0098-A","STL0098-A","STL0098-A","STL0098-A","STL0098-A","STL0098-A","STL0098-A","STL0098-A","STL0098-A","STL0098-A","STL0098-A","STL0098-A","STL0098-A","STL0098-A","STL0098-A","STL0098-A","STL0098-A","STL0098-A","STL0098-A","STL0098-A","STL0098-A","STL0098-A","STL0098-A","STL0098-A","STL0098-A","STL0098-A","STL0098-A","STL0098-A","STL0098-A","STL0098-A","STL0098-A","STL0098-A","STL0098-A","STL0098-A","STL0098-A","STL0098-A","STL0098-A","STL0098-A","STL0098-A","STL0098-A","STL0098-A","STL0098-A","STL0098-A","STL0098-A","STL0098-A","STL0098-A","STL0098-A","STL0098-A","STL0098-A","STL0098-A","STL0098-A","STL0098-A","STL0098-A","STL0098-A","STL0098-A","STL0098-A","STL0098-A","STL00
PFDoA","106","ng/L","","-99","DL","","SPK","106","","-99","LOQ","YES","100","LCS 320-175074/2-
A","250.00","0.50","100",""
"LCSD 320-175097/3-A", "537 (Modified)", "RES", "LCSD 320-175097/3-A", "TALSAC", "1763-23-
1", "Perfluorooctanesulfonic acid
(PFOS)","41.3","ng/L","","1.3","DL","","SPK","111","8","4.0","LOQ","YES","37.1","LCS 320-175097/2-
A","250","0.50","3.0",""
"LCSD 320-175097/3-A", "537 (Modified)", "RES", "LCSD 320-175097/3-A", "TALSAC", "2058-94-
8", "Perfluoroundecanoic acid
(PFUnA)","42.6","ng/L","","0.75","DL","","SPK","107","3","2.5","LOQ","YES","40.0","LCS 320-175097/2-
A","250","0.50","2.0",""
"LCSD 320-175097/3-A", "537 (Modified)", "RES", "LCSD 320-175097/3-A", "TALSAC", "2706-90-
3","Perfluoropentanoic acid
(PFPeA)", "43.1", "ng/L", "", "0.99", "DL", "", "SPK", "108", "6", "2.5", "LOQ", "YES", "40.0", "LCS 320-175097/2-
A","250","0.50","2.0",""
"LCSD 320-175097/3-A", "537 (Modified)", "RES", "LCSD 320-175097/3-A", "TALSAC", "307-24-
4", "Perfluorohexanoic acid
(PFHxA)","43.2","ng/L","","0.79","DL","","SPK","108","3","2.5","LOQ","YES","40.0","LCS 320-175097/2-
A","250","0.50","2.0",""
"LCSD 320-175097/3-A", "537 (Modified)", "RES", "LCSD 320-175097/3-A", "TALSAC", "307-55-
1"."Perfluorododecanoic acid
(PFDoA)","45.0","ng/L","","0.58","DL","","SPK","113","3","2.5","LOQ","YES","40.0","LCS 320-175097/2-
A","250","0.50","2.0",""
"LCSD 320-175097/3-A", "537 (Modified)", "RES", "LCSD 320-175097/3-A", "TALSAC", "335-67-
1","Perfluorooctanoic acid
(PFOA)","41.6","ng/L","","0.75","DL","","SPK","104","4","2.5","LOQ","YES","40.0","LCS 320-175097/2-
A","250","0.50","2.0",""
"LCSD 320-175097/3-A", "537 (Modified)", "RES", "LCSD 320-175097/3-A", "TALSAC", "335-76-
2","Perfluorodecanoic acid
(PFDA)","39.8","ng/L","","0.44","DL","","SPK","100","7","2.5","LOQ","YES","40.0","LCS 320-175097/2-
A","250","0.50","1.0",""
"LCSD 320-175097/3-A", "537 (Modified)", "RES", "LCSD 320-175097/3-A", "TALSAC", "335-77-
3","Perfluorodecanesulfonic acid
(PFDS)","43.3","ng/L","","1.2","DL","","SPK","112","2","4.0","LOQ","YES","38.6","LCS 320-175097/2-
A","250","0.50","3.0",""
"LCSD 320-175097/3-A", "537 (Modified)", "RES", "LCSD 320-175097/3-A", "TALSAC", "355-46-
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(PFHxS)", "35.3", "ng/L", "", "0.87", "DL", "", "SPK", "97", "1", "2.5", "LOQ", "YES", "36.4", "LCS 320-175097/2-

"LCSD 320-175097/3-A", "537 (Modified)", "RES", "LCSD 320-175097/3-A", "TALSAC", "375-22-

4"."Perfluorohexanesulfonic acid

A","250","0.50","2.0",""

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4","Perfluorobutanoic acid
(PFBA)","45.8","ng/L","","0.46","DL","","SPK","114","4","2.5","LOQ","YES","40.0","LCS 320-175097/2-
A","250","0.50","1.0",""
"LCSD 320-175097/3-A", "537 (Modified)", "RES", "LCSD 320-175097/3-A", "TALSAC", "375-73-
5"."Perfluorobutanesulfonic acid
(PFBS)","39.5","ng/L","","0.92","DL","","SPK","112","1","2.5","LOQ","YES","35.4","LCS 320-175097/2-A","250","0.50","2.0",""
"LCSD 320-175097/3-A", "537 (Modified)", "RES", "LCSD 320-175097/3-A", "TALSAC", "375-85-
9", "Perfluoroheptanoic acid
(PFHpA)","42.3","ng/L","","0.80","DL","","SPK","106","0","2.5","LOQ","YES","40.0","LCS 320-175097/2-
A","250","0.50","2.0",""
"LCSD 320-175097/3-A", "537 (Modified)", "RES", "LCSD 320-175097/3-A", "TALSAC", "375-92-
8"."Perfluoroheptanesulfonic Acid
(PFHpS)","45.3","ng/L","","0.71","DL","","SPK","119","2","2.5","LOQ","YES","38.1","LCS 320-175097/2-
A","250","0.50","2.0",""
"LCSD 320-175097/3-A", "537 (Modified)", "RES", "LCSD 320-175097/3-A", "TALSAC", "375-95-
1"."Perfluorononanoic acid
(PFNA)","40.9","ng/L","","0.65","DL","","SPK","102","3","2.5","LOQ","YES","40.0","LCS 320-175097/2-
A","250","0.50","2.0",""
"LCSD 320-175097/3-A", "537 (Modified)", "RES", "LCSD 320-175097/3-A", "TALSAC", "72629-94-
8", "Perfluorotridecanoic Acid
(PFTriA)","48.6","ng/L","","0.55","DL","","SPK","122","10","2.5","LOQ","YES","40.0","LCS 320-175097/2-10","2.5","LOQ","YES","40.0","LCS 320-175097/2-10","2.5","LOQ","YES","40.0","LCS 320-175097/2-10","2.5","LOQ","YES","40.0","LCS 320-175097/2-10","2.5","LOQ","YES","40.0","LCS 320-175097/2-10","2.5","LOQ","YES","40.0","LCS 320-175097/2-10","2.5","LOQ","YES","40.0","LCS 320-175097/2-10","2.5","LOQ","YES","40.0","LCS 320-175097/2-10","2.5","LOQ","YES","40.0","LCS 320-175097/2-10","2.5","LOQ","2.5","LOQ","2.5","LOQ","2.5","LOQ","2.5","LOQ","2.5","LOQ","2.5","LOQ","2.5","LOQ","2.5","LOQ","2.5","LOQ","2.5","LOQ","2.5","LOQ","2.5","LOQ","2.5","LOQ","2.5","LOQ","2.5","LOQ","2.5","LOQ","2.5","LOQ","2.5","LOQ","2.5","LOQ","2.5","LOQ","2.5","LOQ","2.5","LOQ","2.5","LOQ","2.5","LOQ","2.5","LOQ","2.5","LOQ","2.5","LOQ","2.5","LOQ","2.5","LOQ","2.5","LOQ","2.5","LOQ","2.5","LOQ","2.5","LOQ","2.5","LOQ","2.5","LOQ","2.5","LOQ","2.5","LOQ","2.5","LOQ","2.5","LOQ","2.5","LOQ","2.5","LOQ","2.5","LOQ","2.5","LOQ","2.5","LOQ","2.5","LOQ","2.5","LOQ","2.5","LOQ","2.5","LOQ","2.5","LOQ","2.5","LOQ","2.5","LOQ","2.5","LOQ","2.5","LOQ","2.5","LOQ","2.5","LOQ","2.5","LOQ","2.5","LOQ","2.5","LOQ","2.5","LOQ","2.5","LOQ","2.5","LOQ","2.5","LOQ","2.5","LOQ","2.5","LOQ","2.5","LOQ","2.5","LOQ","2.5","LOQ","2.5","LOQ","2.5","LOQ","2.5","LOQ","2.5","LOQ","2.5","LOQ","2.5","LOQ","2.5","LOQ","2.5","LOQ","2.5","LOQ","2.5","LOQ","2.5","LOQ","2.5","LOQ","2.5","LOQ","2.5","LOQ","2.5","LOQ","2.5","LOQ","2.5","LOQ","2.5","LOQ","2.5","LOQ","2.5","LOQ","2.5","LOQ","2.5","LOQ","2.5","LOQ","2.5","LOQ","2.5","LOQ","2.5","LOQ","2.5","LOQ","2.5","LOQ","2.5","LOQ","2.5","LOQ","2.5","LOQ","2.5","LOQ","2.5","LOQ","2.5","LOQ","2.5","LOQ","2.5","LOQ","2.5","LOQ","2.5","LOQ","2.5","LOQ","2.5","LOQ","2.5","LOQ","2.5","LOQ","2.5","LOQ","2.5","LOQ","2.5","LOQ","2.5","LOQ","2.5","LOQ","2.5","LOQ","2.5","LOQ","2.5","LOQ","2.5","LOQ","2.5","LOQ","2.5","LOQ","2.5","LOQ","2.5","LOQ","2.5","LOQ","2.5","LOQ","2.5","LOQ","2.5","LOQ","2.5","LOQ","2.5","LOQ","2.5","LOQ","2.5
A","250","0.50","2.0",""
"LCSD 320-175097/3-A", "537 (Modified)", "RES", "LCSD 320-175097/3-A", "TALSAC", "754-91-6", "Perfluorooctane"
Sulfonamide (FOSA)","44.6","ng/L","","0.64","DL","","SPK","112","3","40","LOQ","YES","40.0","LCS 320-
175097/2-A","250","0.50","2.0",""
"LCSD 320-175097/3-A", "537 (Modified)", "RES", "LCSD 320-175097/3-A", "TALSAC", "STL00990", "13C4"
PFOA","116","ng/L","","-99","DL","","SPK","116","","-99","LOQ","YES","100","LCS 320-175097/2-
A","250","0.50","100",""
"LCSD 320-175097/3-A", "537 (Modified)", "RES", "LCSD 320-175097/3-A", "TALSAC", "STL00991", "13C4
PFOS","91.2","ng/L","","-99","DL","","SPK","95","","-99","LOQ","YES","95.6","LCS 320-175097/2-
A","250","0.50","100",""
"LCSD 320-175097/3-A", "537 (Modified)", "RES", "LCSD 320-175097/3-A", "TALSAC", "STL00992", "13C4"
PFBA","111","ng/L","","-99","DL","","SPK","111","","-99","LOQ","YES","100","LCS 320-175097/2-
A","250","0.50","100",""
"LCSD 320-175097/3-A", "537 (Modified)", "RES", "LCSD 320-175097/3-A", "TALSAC", "STL00993", "13C2
PFHxA","105","ng/L","","-99","DL","","SPK","105","","-99","LOQ","YES","100","LCS 320-175097/2-
A","250","0.50","100",""
"LCSD 320-175097/3-A", "537 (Modified)", "RES", "LCSD 320-175097/3-A", "TALSAC", "STL00994", "1802
PFHxS","103","ng/L","","-99","DL","","SPK","108","","-99","LOQ","YES","94.6","LCS 320-175097/2-
A","250","0.50","100",""
"LCSD 320-175097/3-A", "537 (Modified)", "RES", "LCSD 320-175097/3-A", "TALSAC", "STL00995", "13C5
PFNA","105","ng/L","","-99","DL","","SPK","105","","-99","LOQ","YES","100","LCS 320-175097/2-
A","250","0.50","100",""
"LCSD 320-175097/3-A", "537 (Modified)", "RES", "LCSD 320-175097/3-A", "TALSAC", "STL00996", "13C2
PFDA","128","ng/L","","-99","DL","","SPK","128","","-99","LOQ","YES","100","LCS 320-175097/2-
A","250","0.50","100",""
"LCSD 320-175097/3-A", "537 (Modified)", "RES", "LCSD 320-175097/3-A", "TALSAC", "STL00997", "13C2
PFUnA","104","ng/L","","-99","DL","","SPK","104","","-99","LOQ","YES","100","LCS 320-175097/2-A","250","0.50","100",""
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"LCSD 320-175097/3-A", "537 (Modified)", "RES", "LCSD 320-175097/3-A", "TALSAC", "STL01056", "13C8

A","250","0.50","100",""

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FOSA","25.1","ng/L","","-99","DL","","SPK","25","","-99","LOQ","YES","100","LCS 320-175097/2-
A","250","0.50","100",""
"LCSD 320-175097/3-A","537 (Modified)","RES","LCSD 320-175097/3-A","TALSAC","STL01892","13C4-
PFHpA","124","ng/L","","-99","DL","","SPK","124","","-99","LOQ","YES","100","LCS 320-175097/2-
A","250","0.50","100",""
"LCSD 320-175097/3-A", "537 (Modified)", "RES", "LCSD 320-175097/3-A", "TALSAC", "STL01893", "13C5"
PFPeA","104","ng/L","","-99","DL","","SPK","104","","-99","LOQ","YES","100","LCS 320-175097/2-
A","250","0.50","100",""
"LCSD 320-175742/3-A", "537 (Modified)", "RES", "LCSD 320-175742/3-A", "TALSAC", "754-91-6", "Perfluorooctane"
Sulfonamide (FOSA)","45.0","ng/L","","0.64","DL","","SPK","112","1","40","LOQ","YES","40.0","LCS 320-
175742/2-A","250.00","0.50","2.0",""
"LCSD 320-175742/3-A", "537 (Modified)", "RES", "LCSD 320-175742/3-A", "TALSAC", "STL01056", "13C8
FOSA", "55.3", "ng/L", "", "-99", "DL", "", "SPK", "55", "", "-99", "LOQ", "YES", "100", "LCS 320-175742/2-
A","250.00","0.50","100",""
"MB 320-174599/1-A", "537 (Modified)", "RES", "MB 320-174599/1-A", "TALSAC", "1763-23-
1"."Perfluorooctanesulfonic acid
(PFOS)","3.0","ng/L","U","1.3","DL","","TRG","","4.0","LOQ","YES","-99","","250","0.50","3.0",""
"MB 320-174599/1-A", "537 (Modified)", "RES", "MB 320-174599/1-A", "TALSAC", "2058-94-8", "Perfluoroundecanoic
acid (PFUnA)","2.0","ng/L","U","0.75","DL","","TRG","","","2.5","LOQ","YES","-99","","250","0.50","2.0",""
"MB 320-174599/1-A", "537 (Modified)", "RES", "MB 320-174599/1-A", "TALSAC", "2706-90-3", "Perfluoropentanoic
acid (PFPeA)", "2.0", "ng/L", "U", "0.99", "DL", "", "TRG", "", "", "2.5", "LOQ", "YES", "-99", "", "250", "0.50", "2.0", ""
"MB 320-174599/1-A", "537 (Modified)", "RES", "MB 320-174599/1-A", "TALSAC", "307-24-4", "Perfluorohexanoic
acid (PFHxA)","2.0","ng/L","U","0.79","DL","","TRG","","","2.5","LOQ","YES","-99","","250","0.50","2.0",""
"MB 320-174599/1-A","537 (Modified)","RES","MB 320-174599/1-A","TALSAC","307-55-1","Perfluorododecanoic
acid (PFDoA)","2.0","ng/L","U","0.58","DL","","TRG","","","2.5","LOQ","YES","-99","","250","0.50","2.0","" "MB 320-174599/1-A","537 (Modified)","RES","MB 320-174599/1-A","TALSAC","335-67-1","Perfluorooctanoic
acid (PFOA)","2.0","ng/L","U","0.75","DL","","TRG","","","2.5","LOQ","YES","-99","","250","0.50","2.0",""
"MB 320-174599/1-A", "537 (Modified)", "RES", "MB 320-174599/1-A", "TALSAC", "335-76-2", "Perfluorodecanoic
acid (PFDA)","1.0","ng/L","U","0.44","DL","","TRG","","","2.5","LOQ","YES","-99","","250","0.50","1.0",""
"MB 320-174599/1-A", "537 (Modified)", "RES", "MB 320-174599/1-A", "TALSAC", "335-77-
3"."Perfluorodecanesulfonic acid
(PFDS)","3.0","ng/L","U","1.2","DL","","TRG","","4.0","LOQ","YES","-99","","250","0.50","3.0",""
"MB 320-174599/1-A", "537 (Modified)", "RES", "MB 320-174599/1-A", "TALSAC", "355-46-
4"."Perfluorohexanesulfonic acid
(PFHxS)","2.0","ng/L","U","0.87","DL","","TRG","","","2.5","LOQ","YES","-99","","250","0.50","2.0",""
"MB 320-174599/1-A", "537 (Modified)", "RES", "MB 320-174599/1-A", "TALSAC", "375-22-4", "Perfluorobutanoic
acid (PFBA)","1.0","ng/L","U M","0.46","DL","","TRG","","","2.5","LOQ","YES","-99","","250","0.50","1.0",""
"MB 320-174599/1-A", "537 (Modified)", "RES", "MB 320-174599/1-A", "TALSAC", "375-73-
5", "Perfluorobutanesulfonic acid
(PFBS)","2.0","ng/L","U","0.92","DL","","TRG","","","2.5","LOQ","YES","-99","","250","0.50","2.0",""
"MB 320-174599/1-A", "537 (Modified)", "RES", "MB 320-174599/1-A", "TALSAC", "375-85-9", "Perfluoroheptanoic
acid (PFHpA)","2.0","ng/L","U","0.80","DL","","TRG","","","2.5","LOQ","YES","-99","","250","0.50","2.0",""
"MB 320-174599/1-A", "537 (Modified)", "RES", "MB 320-174599/1-A", "TALSAC", "375-92-
8", "Perfluoroheptanesulfonic Acid
(PFHpS)","2.0","ng/L","U","0.71","DL","","TRG","","","2.5","LOQ","YES","-99","","250","0.50","2.0",""
"MB 320-174599/1-A", "537 (Modified)", "RES", "MB 320-174599/1-A", "TALSAC", "375-95-1", "Perfluorononanoic
acid (PFNA)","2.0","ng/L","U","0.65","DL","","TRG","","","2.5","LOQ","YES","-99","","250","0.50","2.0",""
"MB 320-174599/1-A", "537 (Modified)", "RES", "MB 320-174599/1-A", "TALSAC", "376-06-
7", "Perfluorotetradecanoic acid (PFTeA)", "0.711", "ng/L", "J
M","0.40","DL","","TRG","","","2.5","LOQ","YES","-99","","250","0.50","1.0",""
"MB 320-174599/1-A", "537 (Modified)", "RES", "MB 320-174599/1-A", "TALSAC", "72629-94-
8", "Perfluorotridecanoic Acid
(PFTriA)", "0.631", "ng/L", "J", "0.55", "DL", "", "TRG", "", "", "2.5", "LOQ", "YES", "-99", "", "250", "0.50", "2.0", ""
"MB 320-174599/1-A", "537 (Modified)", "RES", "MB 320-174599/1-A", "TALSAC", "754-91-6", "Perfluorooctane"
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Sulfonamide (FOSA)","2.0","ng/L","U","0.64","DL","","TRG","","","40","LOQ","YES","-99","","250","0.50","2.0",""
"MB 320-174599/1-A", "537 (Modified)", "RES", "MB 320-174599/1-A", "TALSAC", "STL00990", "13C4
PFOA","136","ng/L","","-99","DL","","TRG","136","","-99","LOQ","YES","100","","250","0.50","100",""
"MB 320-174599/1-A", "537 (Modified)", "RES", "MB 320-174599/1-A", "TALSAC", "STL00991", "13C4
PFOS","101","ng/L","","-99","DL","","TRG","105","","-99","LOQ","YES","95.6","","250","0.50","100",""
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PFHxA","115","ng/L","","-99","DL","","TRG","115","","-99","LOQ","YES","100","","250","0.50","100",""
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PFUnA","137","ng/L","","-99","DL","","TRG","137","","-99","LOQ","YES","100","","250","0.50","100",""
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PFDoA","114","ng/L","","-99","DL","","TRG","114","","-99","LOQ","YES","100","","250","0.50","100",""
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"MB 320-174599/1-A", "537 (Modified)", "RES", "MB 320-174599/1-A", "TALSAC", "STL01893", "13C5
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"MB 320-175074/1-A", "537 (Modified)", "RES", "MB 320-175074/1-A", "TALSAC", "376-06-
7", "Perfluorotetradecanoic acid (PFTeA)", "0.807", "ng/L", "J
M","0.40","DL","","TRG","","","2.5","LOQ","YES","-99","","250.00","0.50","1.0",""
"MB 320-175074/1-A", "537 (Modified)", "RES", "MB 320-175074/1-A", "TALSAC", "STL00998", "13C2
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1","Perfluorooctanesulfonic acid
(PFOS)","3.0","ng/L","U","1.3","DL","","TRG","","1.4.0","LOQ","YES","-99","","250","0.50","3.0",""
"MB 320-175097/1-A", "537 (Modified)", "RES", "MB 320-175097/1-A", "TALSAC", "2058-94-8", "Perfluoroundecanoic
acid (PFUnA)","2.0","ng/L","U","0.75","DL","","TRG","","","2.5","LOQ","YES","-99","","250","0.50","2.0",""
"MB 320-175097/1-A", "537 (Modified)", "RES", "MB 320-175097/1-A", "TALSAC", "2706-90-3", "Perfluoropentanoic
acid (PFPeA)","2.0","ng/L","U","0.99","DL","","TRG","","","2.5","LOQ","YES","-99","","250","0.50","2.0",""
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acid (PFHxA)","2.0","ng/L","U","0.79","DL","","TRG","","","2.5","LOQ","YES","-99","","250","0.50","2.0",""
"MB 320-175097/1-A", "537 (Modified)", "RES", "MB 320-175097/1-A", "TALSAC", "307-55-1", "Perfluorododecanoic
acid (PFDoA)","2.0","ng/L","U","0.58","DL","","TRG","","","2.5","LOQ","YES","-99","","250","0.50","2.0",""
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acid (PFOA)","2.0","ng/L","Ù","0.75","DL","","TRG","","","2.5","LOQ","YES","-99","","250","0.50","2.0",""
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acid (PFDA)","1.0","ng/L","U","0.44","DL","","TRG","","","2.5","LOQ","YES","-99","","250","0.50","1.0",""
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3","Perfluorodecanesulfonic acid
(PFDS)","3.0","ng/L","U","1.2","DL","","TRG","","1.4.0","LOQ","YES","-99","","250","0.50","3.0",""
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4"."Perfluorohexanesulfonic acid
(PFHxS)","2.0","ng/L","U","0.87","DL","","TRG","","","2.5","LOQ","YES","-99","","250","0.50","2.0",""
"MB 320-175097/1-A", "537 (Modified)", "RES", "MB 320-175097/1-A", "TALSAC", "375-22-4", "Perfluorobutanoic
acid (PFBA)","1.0","ng/L","U","0.46","DL","","TRG","","","2.5","LOQ","YES","-99","","250","0.50","1.0",""
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8", "Perfluoroheptanesulfonic Acid
(PFHpS)","2.0","ng/L","U","0.71","DL","","TRG","","","2.5","LOQ","YES","-99","","250","0.50","2.0",""
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acid (PFNA)","2.0","ng/L","U","0.65","DL","","TRG","","","2.5","LOQ","YES","-99","","250","0.50","2.0",""
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8", "Perfluorotridecanoic Acid
(PFTriA)","2.0","ng/L","U","0.55","DL","","TRG","","","2.5","LOQ","YES","-99","","250","0.50","2.0",""
"MB 320-175097/1-A", "537 (Modified)", "RES", "MB 320-175097/1-A", "TALSAC", "754-91-6", "Perfluorooctane"
Sulfonamide (FOSA)", "2.0", "ng/L", "U", "0.64", "DL", "", "TRG", "", "1, "40", "LOQ", "YES", "-99", "", "250", "0.50", "2.0", ""
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PFDA","118","ng/L","","-99","DL","","TRG","118","","-99","LOQ","YES","100","","250","0.50","100",""
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Sulfonamide
(FOSA)","2.0","ng/L","U","0.64","DL","","TRG","","","40","LOQ","YES","-99","","250.00","0.50","2.0",""
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INTERNAL CORRESPONDENCE

TO: J. ORIENT DATE: NOVEMBER 7, 2017

FROM: MICHELLE L. ALLEN COPIES: DV FILE

SUBJECT: ORGANIC DATA VALIDATION - POLYFLUOROALKYL SUBSTANCES (PFAS)

FORMER NAVAL AIR STATION (NAS) BRUNSWICK, BRUNSWICK, ME

CTO WE21 PFC ASSESSMENT

SAMPLE DELIVERY GROUP (SDG) 320-29732-1

SAMPLES: 4/Aqueous/PFAS

TP-PFC-019-MID-CARBON TP-PFC-019-TPE TP-PFC-019-TPE-D

TP-PFC-019-TPI

Overview

The sample set for former NAS Brunswick, SDG 320-29732-1 consisted of four (4) aqueous environmental samples. All samples were analyzed for Polyfluoroalkyl Substances (PFAS). One field duplicate pair was included in these Sample Delivery Groups (SDGs): TP-PFC-019-TPE/TP-PFC-019-TPE-D.

The samples were collected by Tetra Tech, Inc. on July 6, 2017 and analyzed by Test America, Inc. The analyses were conducted using EPA Method 537 (Modified) analytical and reporting protocols. The data was evaluated based on the following parameters:

- Data Completeness
- Holding Times/Sample Preservation
- LC/MS Tuning
- Initial and Continuing Calibration Results
 - Laboratory Method Blank Results
 - Surrogate Spike Recoveries
 - Laboratory Control Sample/Laboratory Control Sample Duplicate Results
- Field Duplicate Precision
- Detection Limits
- Compound Identification and Quantification

The asterisk (*) indicates that all quality control criteria were met for this parameter. Qualified (if applicable) analytical results are summarized in Appendix A. Results as reported by the laboratory are presented in Appendix B, and Appendix C contains the documentation to support the findings as discussed in this data validation report. An EPA Region 1 tier II validation was performed on the data in these SDGs. The text of this report has been formulated to address only those areas affecting data quality.

LABORATORY METHOD BLANK RESULTS

The following compounds were detected in the laboratory method blanks at the following maximum concentrations:

<u>Analyte</u>	Concentration (ng/L)	LOQ (> or <)
Perfluorotridecanoic Acid (PFTriA) (1)	0.631	<
Perfluorotetradecanoic acid (PFTeA) (1)	0.711	<

TO: J. ORIENT PAGE 2

SDGs: 320-29732-1

Analyte Concentration (ng/L) LOQ (> or <)
Perfluorotetradecanoic acid (PFTeA) (2) 0.807 <

(1) - Maximum concentration detected in the laboratory method blank, MB 320-174599/1-A, from preparation batch #320-174599 affecting the sample TP-PFC-019-TPE-D analyzed on 7/21/17.

⁽²⁾ - Maximum concentration detected in the laboratory method blank, MB 320-175074/1-A, from preparation batch #320-175074 affecting the reanalyses of samples TP-PFC-019-MID-CARBON, TP-PFC-019-TPE, and TP-PFC-019-TPI analyzed on 7/25/17.

The detected results reported for these compounds below the LOQ were qualified as non-detected, (U).

SURROGATE SPIKE RECOVERIES

The Percent Recoveries (%Rs) for the surrogate spike compound, 13C8-perfluorooctane sulfonamide (13C8-FOSA) were below the lower quality control limit in all the samples. Samples TP-PFC-019-MID-CARBON, TP-PFC-019-TPE, and TP-PFC-019-TPE-D had %Rs < 10%. Sample TP-PFC-019-TPE-D was reextracted/reanalyzed outside the 14 day extraction holding time with similar results. According to the laboratory case narrative, the results for the re-reanalyses of the remaining samples confirmed the results. The %Rs for 13C8-FOSA for the re-extraction/reanalyses were not provided for these samples on the surrogate summary Form IIs. The results from the initial analyses of these samples were used in the data validation. The non-detected result reported for perfluorooctane sulfonamide (FOSA) in sample TP-PFC-019-TPE-D was qualified as rejected, (UR). The detected results reported for FOSA in remaining samples were qualified as estimated with a low bias, (J-).

LABORATORY CONTROL SAMPLE/LABORATORY CONTROL SAMPLE DUPLICATE RESULTS

According to the laboratory case narrative the Laboratory Control Sample/Laboratory Control Sample Duplicate (LCS/LCSD) for preparation batch #320-175074 had %Rs for perfluorotetradecanoic acid (PFTeA) the quality control limits. The associated samples were re-extracted/reanalyzed. The LCSD %R for PFTeA was high in the re-extraction. Due to insufficient sample volume, further re-extraction was not performed. The laboratory only reported results for PFTeA from the re-extraction because the LCS was in control for this analyte. No action was taken because the re-extracted/reanalyzed samples were qualified for laboratory method blank contamination.

NOTES

Field Reagent Blanks (FRBs) were not provided with the environmental samples.

As stated in the laboratory case narrative, due to the sporadic recovery performance for the surrogate 13C8-FOSA, the laboratory temporarily increased the reporting limit for the target analyte FOSA in order to provide better confidence in its reported value. The reporting limit for FOSA has been increased to the same concentration as that fortified into the LCS. At this concentration, the LCS demonstrated an improvement in FOSA %Rs. Thus, indicating sufficient analytical performance to support this RL increase.

The concentrations of perfluorooctanesulfonic acid (PFOS) and perfluorooctanoic acid (PFOA) exceeded the instrument calibration range in sample TP-PFC-019-TPI. The sample was reanalyzed at a 10X dilution. The results for these compounds from the dilution were used in the data validation.

All samples were extracted 14 days after collection. No qualifications were required.

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SDGs: 320-29732-1

Detected results reported below the Limit of Quantitation (LOQ) but above the Detection Limit (DL) were qualified as estimated, (J). Non-detected results are reported to the Limit of Detection (LOD).

EXECUTIVE SUMMARY

Laboratory Performance: Contaminants were detected in the laboratory method blanks. Surrogate spike %Rs were low for 13C8-FOSA. A LCS/LCSD analyses has %Rs above the upper quality control limits for PFTeA. Reporting limits for FOSA were elevated due to the sporadic recovery of 13C8-FOSA.

Other Factors Affecting Data Quality: One sample was further diluted. Detected results below the LOQ were estimated.

The data for these analyses were reviewed with reference to the EPA New England Environmental Data Review Supplement for Regional Data Review Elements Superfund Guidance/Procedures (April 2013), National Functional Guidelines for Organic Data Validation (January 2017), and the Department of Defense (DoD) document entitled, "Quality Systems Manual (QSM) for Environmental Laboratories" (July 2013). The text of this report has been formulated to address only those areas affecting data quality.

Tetra Tech, Inc. Michelle L. Allen

Environmental Chemist

Michelle J. ah

Tetra Tech, Inc.

Joseph A. Samchuck Data Validation Manager

Attachments:

Appendix A - Qualified Analytical Results

Appendix B - Results as reported by the Laboratory

Appendix C - Support Documentation

Data Qualifier Definitions

The following definitions provide brief explanations of the validation qualifiers assigned to results in the data review process.

U	The analyte was analyzed for, but was not detected at a level greater than or equal to the level of the adjusted method detection limit for sample and method.
J	The analyte was positively identified and the associated numerical value is the approximate concentration of the analyte in the sample (due either to the quality of the data generated because certain quality control criteria were not met, or the concentration of the analyte was below the reporting limit).
J+	The result is an estimated quantity, but the result may be biased high.
J-	The result is an estimated quantity, but the result may be biased low.
UJ	The analyte was analyzed for, but was not detected. The reported detection limit is approximate and may be inaccurate or imprecise.
R	The sample result (detected) is unusable due to the quality of the data generated because certain criteria were not met. The analyte may or may not be present in the sample.
UR	The sample result (nondetected) is unusable due to the quality of the data generated because certain criteria were not met. The analyte may or may not be present in the sample.

APPENDIX A QUALIFIED LABORATORY RESULTS

Qualifier Codes:

A = Lab Blank Contamination

B = Field Blank Contamination

C = Calibration Noncompliance (i.e., % RSDs, %Ds, ICVs, CCVs, RRFs, etc.)

C01 = GC/MS Tuning Noncompliance

D = MS/MSD Recovery Noncompliance

E = LCS/LCSD Recovery Noncompliance

F = Lab Duplicate Imprecision

G = Field Duplicate Imprecision

H = Holding Time Exceedance

I = ICP Serial Dilution Noncompliance

J = ICP PDS Recovery Noncompliance; MSA's r < 0.995

K = ICP Interference - includes ICS % R Noncompliance

L = Instrument Calibration Range Exceedance

M = Sample Preservation Noncompliance

N = Internal Standard Noncompliance

N01 = Internal Standard Recovery Noncompliance Dioxins

N02 = Recovery Standard Noncompliance Dioxins

N03 = Clean-up Standard Noncompliance Dioxins

O = Poor Instrument Performance (i.e., base-time drifting)

P = Uncertainty near detection limit (< 2 x IDL for inorganics and <CRQL for organics)

Q = Other problems (can encompass a number of issues; i.e.chromatography,interferences, etc.)

R = Surrogates Recovery Noncompliance

S = Pesticide/PCB Resolution

T = % Breakdown Noncompliance for DDT and Endrin

U = RPD between columns/detectors >40% for positive results determined via GC/HPLC

V = Non-linear calibrations; correlation coefficient r < 0.995

W = EMPC result

X = Signal to noise response drop

Y = Percent solids <30%

Z = Uncertainty at 2 standard deviations is greater than sample activity

Z1 = Tentatively Identified Compound considered presumptively present

Z2 = Tentatively Identified Compound column bleed

Z3 = Tentatively Identified Compound aldol condensate

Z4 = Sample activity is less than the at uncertainty at 3 standard deviations and greater than the MDC

Z5 = Sample activity is less than the at uncertainty at 3 standard deviations and less than the MDC

PROJ_NO: 08005-WE21	NSAMPLE	TP-PFC-019-	MID-CAI	RBON	TP-PFC-019-	MID-CA	RBON-RE	TP-PFC-019-T	PE		TP-PFC-019-T	PE-D	
SDG: 320-29732-1	LAB_ID	320-29732-2			320-29732-2			320-29732-3			320-29732-4		
FRACTION: PFAS	SAMP_DATE	7/6/2017			7/6/2017			7/6/2017			7/6/2017		
MEDIA: WATER	A: WATER QC_TYPE NM NM		NM			NM							
	UNITS	NG/L			NG/L			NG/L			NG/L		
	PCT_SOLIDS	0.0			0.0			0.0			0.0		
	DUP_OF										TP-PFC-019-T	PE	
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
PENTADECAFLUOROOCT	ANOIC ACID	2	U					0.76	J	Р	1.9	U	
PERFLUOROBUTANESUL	FONIC ACID	2	U					1.9	U		1.9	U	
PERFLUOROBUTANOIC A	CID	100)					85			82		
PERFLUORODECANE SU	LFONIC ACID	3	U					2.9	U		2.9	U	
PERFLUORODECANOIC A	ACID	1	U					0.96	U		0.97	U	
PERFLUORODODECANO	C ACID	2	U					1.9	U		1.9	U	
PERFLUOROHEPTANESU	ILFONIC ACID	2	U					1.9	U		1.9	U	
PERFLUOROHEPTANOIC	ACID	2	U					1.9	U		1.9	U	
PERFLUOROHEXANESUL	FONIC ACID	2	U					1.9	U		1.9	U	
PERFLUOROHEXANOIC A	CID	1.2	J	Р				6.1			6.4		
PERFLUORONONANOIC A	ACID	2	U					1.9	U		1.9	U	
PERFLUOROOCTANE SU	LFONAMIDE	2.5	J-	PR				2.1	J-	PR	1.9	UR	R
PERFLUOROOCTANE SU	LFONIC ACID	3	U					2.9	U		2.9	U	
PERFLUOROPENTANOIC	ACID	16						24			24		
PERFLUOROTETRADECA	NOIC ACID				1.4	U	Α				0.97	U	
PERFLUOROTRIDECANO	IC ACID	2	U					1.9	U		1.9	U	
PERFLUOROUNDECANOI	C ACID	2	U					1.9	U		1.9	U	

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PROJ_NO: 08005-WE21	NSAMPLE	TP-PFC-019-7	PE-RE		TP-PFC-019-7	PI		TP-PFC-019-	TPI-DL		TP-PFC-019-	TPI-RE	
SDG: 320-29732-1	LAB_ID	320-29732-3		320-29732-1			320-29732-1			320-29732-1			
FRACTION: PFAS	SAMP_DATE	7/6/2017			7/6/2017	7/6/2017		7/6/2017	7/6/2017		7/6/2017	7/6/2017	
MEDIA: WATER	MEDIA: WATER QC_TYPE				NM	NM		NM			NM	NM	
UNITS		NG/L	NG/L		NG/L		NG/L	NG/L		NG/L	NG/L		
	PCT_SOLIDS	0.0			0.0		0.0			0.0	0.0		
	DUP_OF												
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
PENTADECAFLUOROOC1	TANOIC ACID							1500)				
PERFLUOROBUTANESUL	FONIC ACID				52								
PERFLUOROBUTANOIC A	CID				77								
PERFLUORODECANE SU	LFONIC ACID				2.9	U							
PERFLUORODECANOIC A					1.1	-	Р						
PERFLUORODODECANO	IC ACID				2	U							
PERFLUOROHEPTANESL					9								
PERFLUOROHEPTANOIC					66								
PERFLUOROHEXANESUL					350								
PERFLUOROHEXANOIC A					350				1				
PERFLUORONONANOIC					2.3		Р						
PERFLUOROOCTANE SU					1.1	J-	PR		1				
PERFLUOROOCTANE SU								360)				
PERFLUOROPENTANOIC					180								
PERFLUOROTETRADECA		1.5	U	Α							1.0	6 U	Α
PERFLUOROTRIDECANO					_	U							
PERFLUOROUNDECANO	IC ACID				2	U							

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APPENDIX B

RESULTS AS REPORTED BY THE LABORATORY

Lab Name: TestAmerica Sacramento Job No.: 320-29732-1

SDG No.:

Client Sample ID: TP-PFC-019-TPI Lab Sample ID: 320-29732-1

Matrix: Water Lab File ID: 2017.07.23A_016.d

Analysis Method: 537 (Modified) Date Collected: 07/06/2017 09:11

Extraction Method: 3535 Date Extracted: 07/20/2017 10:13

Sample wt/vol: 256.3(mL) Date Analyzed: 07/23/2017 16:16

Con. Extract Vol.: 0.50(mL) Dilution Factor: 1

Injection Volume: 2(uL) GC Column: GeminiC18 3x100 ID: 3(mm)

% Moisture: GPC Cleanup:(Y/N) N

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
275 00 4		7.7			0.001	0.45
375-22-4	Perfluorobutanoic acid (PFBA)	77	M	2.4	0.98	0.45
2706-90-3	Perfluoropentanoic acid (PFPeA)	180		2.4	2.0	0.96
307-24-4	Perfluorohexanoic acid (PFHxA)	350		2.4	2.0	0.77
375-85-9	Perfluoroheptanoic acid (PFHpA)	66		2.4	2.0	0.78
335-67-1	Perfluorooctanoic acid (PFOA)	1300	M E	2.4	2.0	0.73
375-95-1	Perfluorononanoic acid (PFNA)	2.3	J	2.4	2.0	0.64
335-76-2	Perfluorodecanoic acid (PFDA)	1.1	J	2.4	0.98	0.43
2058-94-8	Perfluoroundecanoic acid (PFUnA)	2.0	U	2.4	2.0	0.73
307-55-1	Perfluorododecanoic acid (PFDoA)	2.0	U	2.4	2.0	0.57
72629-94-8	Perfluorotridecanoic Acid (PFTriA)	2.0	U	2.4	2.0	0.54
375-73-5	Perfluorobutanesulfonic acid (PFBS)	52		2.4	2.0	0.90
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	350		2.4	2.0	0.85
375-92-8	Perfluoroheptanesulfonic Acid (PFHpS)	9.0		2.4	2.0	0.70
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	370	E	3.9	2.9	1.2
335-77-3	Perfluorodecanesulfonic acid (PFDS)	2.9	U	3.9	2.9	1.2
754-91-6	Perfluorooctane Sulfonamide (FOSA)	1.1	J	39	2.0	0.62

Lab Name: TestAmerica Sacramento Job No.: 320-29732-1

SDG No.:

Client Sample ID: TP-PFC-019-TPI Lab Sample ID: 320-29732-1

Matrix: Water Lab File ID: 2017.07.23A_016.d

Analysis Method: 537 (Modified) Date Collected: 07/06/2017 09:11

Extraction Method: 3535 Date Extracted: 07/20/2017 10:13

Sample wt/vol: 256.3(mL) Date Analyzed: 07/23/2017 16:16

Con. Extract Vol.: 0.50(mL) Dilution Factor: 1

Injection Volume: 2(uL) GC Column: GeminiC18 3x100 ID: 3(mm)

% Moisture: GPC Cleanup:(Y/N) N

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL01056	13C8 FOSA	14	Q	25-150
STL00992	13C4 PFBA	77		25-150
STL00993	13C2 PFHxA	71		25-150
STL00990	13C4 PFOA	67		25-150
STL00995	13C5 PFNA	66		25-150
STL00996	13C2 PFDA	65		25-150
STL00997	13C2 PFUnA	48		25-150
STL00998	13C2 PFDoA	45		25-150
STL00994	1802 PFHxS	87		25-150
STL00991	13C4 PFOS	83		25-150
STL01892	13C4-PFHpA	93		25-150
STL01893	13C5 PFPeA	80		25-150

Lab Name: TestAmerica Sacramento Job No.: 320-29732-1

SDG No.:

Client Sample ID: TP-PFC-019-TPI RE Lab Sample ID: 320-29732-1 RE

Matrix: Water Lab File ID: 2017.07.25B_009.d

Analysis Method: 537 (Modified) Date Collected: 07/06/2017 09:11

Extraction Method: 3535 Date Extracted: 07/20/2017 09:15

Sample wt/vol: 258(mL) Date Analyzed: 07/25/2017 15:05

Con. Extract Vol.: 0.50 (mL) Dilution Factor: 1

Injection Volume: 2(uL) GC Column: GeminiC18 3x100 ID: 3(mm)

% Moisture: GPC Cleanup:(Y/N) N

С	AS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
376-	-06-7	Perfluorotetradecanoic acid (PFTeA)	1.6	JМQ	2.4	0.97	0.39

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL00998	13C2 PFDoA	67		25-150

Lab Name: TestAmerica Sacramento Job No.: 320-29732-1

SDG No.:

Client Sample ID: TP-PFC-019-TPI DL Lab Sample ID: 320-29732-1 DL

Matrix: Water Lab File ID: 2017.07.24AA_029.d

Analysis Method: 537 (Modified) Date Collected: 07/06/2017 09:11

Extraction Method: 3535 Date Extracted: 07/20/2017 10:13

Sample wt/vol: 256.3(mL) Date Analyzed: 07/24/2017 20:07

Con. Extract Vol.: 0.50(mL) Dilution Factor: 10

Injection Volume: 2(uL) GC Column: GeminiC18 3x100 ID: 3(mm)

% Moisture: GPC Cleanup:(Y/N) N

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
375-22-4	Perfluorobutanoic acid (PFBA)	80	D	24	9.8	4.5
2706-90-3	Perfluoropentanoic acid (PFPeA)	190	D	24	20	9.6
307-24-4	Perfluorohexanoic acid (PFHxA)	350	D	24	20	7.7
375-85-9	Perfluoroheptanoic acid (PFHpA)	70	D	24	20	7.8
335-67-1	Perfluorooctanoic acid (PFOA)	1500	D M	24	20	7.3
375-95-1	Perfluorononanoic acid (PFNA)	20	U	24	20	6.4
335-76-2	Perfluorodecanoic acid (PFDA)	4.8	JD	24	9.8	4.3
2058-94-8	Perfluoroundecanoic acid (PFUnA)	20	U	24	20	7.3
307-55-1	Perfluorododecanoic acid (PFDoA)	20	U	24	20	5.7
72629-94-8	Perfluorotridecanoic Acid (PFTriA)	5.6	JD	24	20	5.4
375-73-5	Perfluorobutanesulfonic acid (PFBS)	55	D	24	20	9.0
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	360	D	24	20	8.5
375-92-8	Perfluoroheptanesulfonic Acid (PFHpS)	12	JD	24	20	7.0
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	360	D	39	29	12
335-77-3	Perfluorodecanesulfonic acid (PFDS)	29	U	39	29	12
754-91-6	Perfluorooctane Sulfonamide (FOSA)	18	JD	390	20	6.2

Lab Name: TestAmerica Sacramento Job No.: 320-29732-1

SDG No.:

Client Sample ID: TP-PFC-019-TPI DL Lab Sample ID: 320-29732-1 DL

Matrix: Water Lab File ID: 2017.07.24AA_029.d

Analysis Method: 537 (Modified) Date Collected: 07/06/2017 09:11

Extraction Method: 3535 Date Extracted: 07/20/2017 10:13

Sample wt/vol: 256.3(mL) Date Analyzed: 07/24/2017 20:07

Con. Extract Vol.: 0.50(mL) Dilution Factor: 10

Injection Volume: 2(uL) GC Column: GeminiC18 3x100 ID: 3(mm)

% Moisture: GPC Cleanup:(Y/N) N

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL01056	13C8 FOSA	15	Q	25-150
STL00992	13C4 PFBA	98		25-150
STL00993	13C2 PFHxA	94		25-150
STL00990	13C4 PFOA	88		25-150
STL00995	13C5 PFNA	77		25-150
STL00996	13C2 PFDA	62		25-150
STL00997	13C2 PFUnA	54		25-150
STL00998	13C2 PFDoA	47		25-150
STL00994	1802 PFHxS	96		25-150
STL00991	13C4 PFOS	82		25-150
STL01892	13C4-PFHpA	105		25-150
STL01893	13C5 PFPeA	95		25-150

Lab Name: TestAmerica Sacramento Job No.: 320-29732-1

SDG No.:

Client Sample ID: TP-PFC-019-MID-CARBON Lab Sample ID: 320-29732-2

Matrix: Water Lab File ID: 2017.07.24AA_030.d

Analysis Method: 537 (Modified) Date Collected: 07/06/2017 09:16

Extraction Method: 3535 Date Extracted: 07/20/2017 10:13

Sample wt/vol: 250.8(mL) Date Analyzed: 07/24/2017 20:14

Con. Extract Vol.: 0.50 (mL) Dilution Factor: 1

Injection Volume: 2(uL) GC Column: GeminiC18 3x100 ID: 3(mm)

% Moisture: GPC Cleanup:(Y/N) N

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
375-22-4	Perfluorobutanoic acid (PFBA)	100		2.5	1.0	0.46
2706-90-3	Perfluoropentanoic acid (PFPeA)	16		2.5	2.0	0.99
307-24-4	Perfluorohexanoic acid (PFHxA)	1.2	J	2.5	2.0	0.78
375-85-9	Perfluoroheptanoic acid (PFHpA)	2.0	U M	2.5	2.0	0.80
335-67-1	Perfluorooctanoic acid (PFOA)	2.0	U M	2.5	2.0	0.75
375-95-1	Perfluorononanoic acid (PFNA)	2.0	U	2.5	2.0	0.65
335-76-2	Perfluorodecanoic acid (PFDA)	1.0	U	2.5	1.0	0.44
2058-94-8	Perfluoroundecanoic acid (PFUnA)	2.0	U	2.5	2.0	0.75
307-55-1	Perfluorododecanoic acid (PFDoA)	2.0	U	2.5	2.0	0.58
72629-94-8	Perfluorotridecanoic Acid (PFTriA)	2.0	U	2.5	2.0	0.55
375-73-5	Perfluorobutanesulfonic acid (PFBS)	2.0	U	2.5	2.0	0.92
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	2.0	U	2.5	2.0	0.87
375-92-8	Perfluoroheptanesulfonic Acid (PFHpS)	2.0	U	2.5	2.0	0.71
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	3.0	U	4.0	3.0	1.3
335-77-3	Perfluorodecanesulfonic acid (PFDS)	3.0	U	4.0	3.0	1.2
754-91-6	Perfluorooctane Sulfonamide (FOSA)	2.5	J	40	2.0	0.64

Lab Name: TestAmerica Sacramento Job No.: 320-29732-1

SDG No.:

Client Sample ID: TP-PFC-019-MID-CARBON Lab Sample ID: 320-29732-2

Matrix: Water Lab File ID: 2017.07.24AA_030.d

Analysis Method: 537 (Modified) Date Collected: 07/06/2017 09:16

Extraction Method: 3535 Date Extracted: 07/20/2017 10:13

Sample wt/vol: 250.8(mL) Date Analyzed: 07/24/2017 20:14

Con. Extract Vol.: 0.50 (mL) Dilution Factor: 1

Injection Volume: 2(uL) GC Column: GeminiC18 3x100 ID: 3(mm)

% Moisture: GPC Cleanup:(Y/N) N

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL01056	13C8 FOSA	6	Q	25-150
STL00992	13C4 PFBA	101		25-150
STL00993	13C2 PFHxA	100		25-150
STL00990	13C4 PFOA	102		25-150
STL00995	13C5 PFNA	81		25-150
STL00996	13C2 PFDA	72		25-150
STL00997	13C2 PFUnA	63		25-150
STL00998	13C2 PFDoA	58		25-150
STL00994	1802 PFHxS	102		25-150
STL00991	13C4 PFOS	99		25-150
STL01892	13C4-PFHpA	116		25-150
STL01893	13C5 PFPeA	102		25-150

Lab Name: TestAmerica Sacramento Job No.: 320-29732-1

SDG No.:

Client Sample ID: TP-PFC-019-MID-CARBON RE Lab Sample ID: 320-29732-2 RE

Matrix: Water Lab File ID: 2017.07.25B_010.d

Analysis Method: 537 (Modified) Date Collected: 07/06/2017 09:16

Extraction Method: 3535 Date Extracted: 07/20/2017 09:15

Sample wt/vol: 252(mL) Date Analyzed: 07/25/2017 15:12

Con. Extract Vol.: 0.50 (mL) Dilution Factor: 1

Injection Volume: 2(uL) GC Column: GeminiC18 3x100 ID: 3(mm)

% Moisture: GPC Cleanup:(Y/N) N

Analysis Batch No.: $\underline{175951}$ Units: $\underline{ng/L}$

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
376-06-7	Perfluorotetradecanoic acid (PFTeA)	1.4	JMQ	2.5	0.99	0.40

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL00998	13C2 PFDoA	92		25-150

Lab Name: TestAmerica Sacramento Job No.: 320-29732-1

SDG No.:

Client Sample ID: TP-PFC-019-TPE Lab Sample ID: 320-29732-3

Matrix: Water Lab File ID: 2017.07.23A_018.d

Analysis Method: 537 (Modified) Date Collected: 07/06/2017 09:21

Extraction Method: 3535 Date Extracted: 07/20/2017 10:13

Sample wt/vol: 259.5(mL) Date Analyzed: 07/23/2017 16:30

Con. Extract Vol.: 0.50 (mL) Dilution Factor: 1

Injection Volume: 2(uL) GC Column: GeminiC18 3x100 ID: 3(mm)

% Moisture: GPC Cleanup:(Y/N) N

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
375-22-4	Perfluorobutanoic acid (PFBA)	85		2.4	0.96	0.44
2706-90-3	Perfluoropentanoic acid (PFPeA)	24		2.4	1.9	0.95
307-24-4	Perfluorohexanoic acid (PFHxA)	6.1		2.4	1.9	0.76
375-85-9	Perfluoroheptanoic acid (PFHpA)	1.9	Ū	2.4	1.9	0.77
335-67-1	Perfluorooctanoic acid (PFOA)	0.76	JМ	2.4	1.9	0.72
375-95-1	Perfluorononanoic acid (PFNA)	1.9	U	2.4	1.9	0.63
335-76-2	Perfluorodecanoic acid (PFDA)	0.96	U	2.4	0.96	0.42
2058-94-8	Perfluoroundecanoic acid (PFUnA)	1.9	U	2.4	1.9	0.72
307-55-1	Perfluorododecanoic acid (PFDoA)	1.9	U	2.4	1.9	0.56
72629-94-8	Perfluorotridecanoic Acid (PFTriA)	1.9	Ū	2.4	1.9	0.53
375-73-5	Perfluorobutanesulfonic acid (PFBS)	1.9	Ū	2.4	1.9	0.88
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	1.9	Ū	2.4	1.9	0.84
375-92-8	Perfluoroheptanesulfonic Acid (PFHpS)	1.9	Ū	2.4	1.9	0.69
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	2.9	Ū	3.9	2.9	1.2
335-77-3	Perfluorodecanesulfonic acid (PFDS)	2.9	Ū	3.9	2.9	1.2
754-91-6	Perfluorooctane Sulfonamide (FOSA)	2.1	J	39	1.9	0.61

Lab Name: TestAmerica Sacramento Job No.: 320-29732-1

SDG No.:

Client Sample ID: TP-PFC-019-TPE Lab Sample ID: 320-29732-3

Matrix: Water Lab File ID: 2017.07.23A_018.d

Analysis Method: 537 (Modified) Date Collected: 07/06/2017 09:21

Extraction Method: 3535 Date Extracted: 07/20/2017 10:13

Sample wt/vol: 259.5(mL) Date Analyzed: 07/23/2017 16:30

Con. Extract Vol.: 0.50 (mL) Dilution Factor: 1

Injection Volume: 2(uL) GC Column: GeminiC18 3x100 ID: 3(mm)

% Moisture: GPC Cleanup:(Y/N) N

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL01056	13C8 FOSA	2	Q	25-150
STL00992	13C4 PFBA	102		25-150
STL00993	13C2 PFHxA	101		25-150
STL00990	13C4 PFOA	102		25-150
STL00995	13C5 PFNA	85		25-150
STL00996	13C2 PFDA	93		25-150
STL00997	13C2 PFUnA	78		25-150
STL00998	13C2 PFDoA	69		25-150
STL00994	1802 PFHxS	105		25-150
STL00991	13C4 PFOS	102		25-150
STL01892	13C4-PFHpA	118		25-150
STL01893	13C5 PFPeA	98		25-150

Lab Name: TestAmerica Sacramento Job No.: 320-29732-1

SDG No.:

Client Sample ID: TP-PFC-019-TPE RE Lab Sample ID: 320-29732-3 RE

Matrix: Water Lab File ID: 2017.07.25B_011.d

Analysis Method: 537 (Modified) Date Collected: 07/06/2017 09:21

Extraction Method: 3535 Date Extracted: 07/20/2017 09:15

Sample wt/vol: 254.6(mL) Date Analyzed: 07/25/2017 15:19

Con. Extract Vol.: 0.50 (mL) Dilution Factor: 1

Injection Volume: 2(uL) GC Column: GeminiC18 3x100 ID: 3(mm)

% Moisture: GPC Cleanup:(Y/N) N

CAS NO	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
376-06-7	Perfluorotetradecanoic acid (PFTeA)	1.5	JMQ	2.5	0.98	0.39

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL00998	13C2 PFDoA	87		25-150

Lab Name: TestAmerica Sacramento Job No.: 320-29732-1

SDG No.:

Client Sample ID: TP-PFC-019-TPE-D Lab Sample ID: 320-29732-4

Matrix: Water Lab File ID: 2017.07.21C_019.d

Analysis Method: 537 (Modified) Date Collected: 07/06/2017 00:00

Extraction Method: 3535 Date Extracted: 07/18/2017 07:22

Sample wt/vol: 258.4 (mL) Date Analyzed: 07/21/2017 21:06

Con. Extract Vol.: 0.50 (mL) Dilution Factor: 1

Injection Volume: 2(uL) GC Column: GeminiC18 3x100 ID: 3(mm)

% Moisture: GPC Cleanup:(Y/N) N

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
375-22-4	Perfluorobutanoic acid (PFBA)	82		2.4	0.97	0.44
2706-90-3	Perfluoropentanoic acid (PFPeA)	24		2.4	1.9	0.96
307-24-4	Perfluorohexanoic acid (PFHxA)	6.4		2.4	1.9	0.76
375-85-9	Perfluoroheptanoic acid (PFHpA)	1.9	Ū	2.4	1.9	0.78
335-67-1	Perfluorooctanoic acid (PFOA)	1.9	U M	2.4	1.9	0.72
375-95-1	Perfluorononanoic acid (PFNA)	1.9	Ū	2.4	1.9	0.63
335-76-2	Perfluorodecanoic acid (PFDA)	0.97	Ū	2.4	0.97	0.43
2058-94-8	Perfluoroundecanoic acid (PFUnA)	1.9	Ū	2.4	1.9	0.72
307-55-1	Perfluorododecanoic acid (PFDoA)	1.9	Ū	2.4	1.9	0.57
72629-94-8	Perfluorotridecanoic Acid (PFTriA)	1.9	Ū	2.4	1.9	0.53
376-06-7	Perfluorotetradecanoic acid (PFTeA)	0.97	Ū	2.4	0.97	0.39
375-73-5	Perfluorobutanesulfonic acid (PFBS)	1.9	Ū	2.4	1.9	0.89
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	1.9	Ū	2.4	1.9	0.84
375-92-8	Perfluoroheptanesulfonic Acid (PFHpS)	1.9	Ū	2.4	1.9	0.69
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	2.9	Ū	3.9	2.9	1.2
335-77-3	Perfluorodecanesulfonic acid (PFDS)	2.9	U	3.9	2.9	1.2
754-91-6	Perfluorooctane Sulfonamide (FOSA)	1.9	U	39	1.9	0.62

Lab Name: TestAmerica Sacramento Job No.: 320-29732-1

SDG No.:

Client Sample ID: TP-PFC-019-TPE-D Lab Sample ID: 320-29732-4

Matrix: Water Lab File ID: 2017.07.21C_019.d

Analysis Method: 537 (Modified) Date Collected: 07/06/2017 00:00

Extraction Method: 3535 Date Extracted: 07/18/2017 07:22

Sample wt/vol: 258.4 (mL) Date Analyzed: 07/21/2017 21:06

Con. Extract Vol.: 0.50 (mL) Dilution Factor: 1

Injection Volume: 2(uL) GC Column: GeminiC18 3x100 ID: 3(mm)

% Moisture: GPC Cleanup:(Y/N) N

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL01056	13C8 FOSA	0.3	Q	25-150
STL00992	13C4 PFBA	96		25-150
STL00993	13C2 PFHxA	98		25-150
STL00990	13C4 PFOA	111		25-150
STL00995	13C5 PFNA	91		25-150
STL00996	13C2 PFDA	85		25-150
STL00997	13C2 PFUnA	67		25-150
STL00998	13C2 PFDoA	70		25-150
STL00994	1802 PFHxS	106		25-150
STL00991	13C4 PFOS	100		25-150
STL01892	13C4-PFHpA	118		25-150
STL01893	13C5 PFPeA	98		25-150

Lab Name: TestAmerica Sacramento Job No.: 320-29732-1

SDG No.:

Client Sample ID: TP-PFC-019-TPE-D RE Lab Sample ID: 320-29732-4 RE

Matrix: Water Lab File ID: 2017.07.27C_014.d

Analysis Method: 537 (Modified) Date Collected: 07/06/2017 00:00

Extraction Method: 3535 Date Extracted: 07/25/2017 09:58

Sample wt/vol: 245.5(mL) Date Analyzed: 07/27/2017 22:18

Con. Extract Vol.: 0.50 (mL) Dilution Factor: 1

Injection Volume: 2(uL) GC Column: GeminiC18 3x100 ID: 3(mm)

% Moisture: GPC Cleanup:(Y/N) N

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
754-91-6	Perfluorooctane Sulfonamide (FOSA)	2.0	U H	41	2.0	0.65

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL01056	13C8 FOSA	2	Q	25-150

APPENDIX C SUPPORT DOCUMENTATION

ANALYTE	ORIGINAL	DUPLICATE	RL	RPD	RPD > 30%
PENTADECAFLUOROOCTANOIC ACID	0.76	1.9	2.4	85.71	TRUE
PERFLUOROBUTANOIC ACID	85	82	2.4	3.59	FALSE
PERFLUOROHEXANOIC ACID	6.1	6.4	2.4	4.80	FALSE
PERFLUOROOCTANE SULFONAMIDE	2.1	1.9	39	10.00	FALSE
PERFLUOROPENTANOIC ACID	24	24	2.4	0.00	FALSE
PERFLUOROTETRADECANOIC ACID	1.5	0.97	2.4	42.91	TRUE

ORIGINAL SAMPLE CONC >2xRL	DUPLICATE SAMPLE CONC >2xRL	DIFFERENCE >2xRL
FALSE	FALSE	FALSE
TRUE	TRUE	FALSE
TRUE	TRUE	FALSE
FALSE	FALSE	FALSE
TRUE	TRUE	FALSE
FALSE	FALSE	FALSE

SDG 320-29732-1 TP-PFC-019-TPE/TP-PFC-019-TPE-D

NAS BRUNSWICK SDG 320-29732-1

SAMPLE IDENTIFICATION TP-PFC-019-TPI

COMPOUND PENTADECAFLUOROOCTANOIC ACID

COMPOUND AREA	5991551
INTERNAL STANDARD AMOUNT (ng/ml)	5
DILUTION FACTOR	10
INTERNAL STANDARD AREA	360631
AVERAGE RRF	1.067
SAMPLE VOLUME (ml)	256.3
VOLUME EXTRACT (ml)	0.5
VOLUME INJECTED (μΙ)	1
ml to L	1000

CONCENTRATION = 1518.81 ng/L

5991551 x 5ng/ml x 1000ml x 0.5ml x 10/(360631 x 1.067 x 256.3ml x 1µl x 1L)

Report Date: 25-Jul-2017 11:29:49 Chrom Revision: 2.2 26-Jun-2017 08:09:44

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170725-45831.b\2017.07.24AA_029.d

Lims ID: 320-29732-C-1-A Client ID: TP-PFC-019-TPI

Sample Type: Client

Inject. Date: 24-Jul-2017 20:07:48 ALS Bottle#: 21 Worklist Smp#: 2

Injection Vol: 2.0 ul Dil. Factor: 10.0000

Sample Info: 320-29732-c-1-a 10X Misc. Info.: Plate: 1 Rack: 5

Operator ID: SACINSTLCMS01 Instrument ID: A8_N

Method: \ChromNa\Sacramento\ChromData\A8_N\20170725-45831.b\A8_N.m

Limit Group: LC PFC_DOD ICAL

Last Update: 25-Jul-2017 11:29:47 Calib Date: 23-Jul-2017 13:58:26

Integrator: Picker

Quant Method: Isotopic Dilution Quant By: Initial Calibration

Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20170723-45765.b\2017.07.23ICAL_010.d

Column 1: Det: EXP1

Process Host: XAWRK029

First Level Reviewer: chandrasenas Date: 25-Jul-2017 11:27:51

First Level Reviewer: chandrasenas			Date:	2	25-Jul-2017 11:27:51					
Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
2 Perfluorobutyric acid										
212.90 > 169.00		1.547	0.009	1.000	547520	4.08			226	
D 113C4 PFBA										
217.00 > 172.00	1.556	1.547	0.009		760862	4.88		9.8	7568	
4 Perfluoropen	tanoic a	cid								
262.90 > 219.00	1.766	1.756	0.010	1.000	1086642	9.91			574	
D 3 13C5-PFPe	A									
267.90 > 223.00	1.766	1.756	0.010		525883	4.76		9.5	10402	
5 Perfluorobuta	anesulfo	nic acid								
298.90 > 80.00		1.784	0.009	1.000	554719	2.82			346	
298.90 > 99.00		1.784	0.0	0.995	222940		2.49(0.00-0.00)		318	
6 Perfluorohex										
313.00 > 269.00		2.032	0.0	1.000	1614537	17.8			2779	
D 7 13C2 PFHx										
315.00 > 270.00		2.032	0.0		477398	4.72		9.4	11834	
10 Perfluoroher				1 000	004404	0.53			700	
363.00 > 319.00		2.366	0.009	1.000	324104	3.57			708	
D 9 13C4-PFHp		0011				5 o 7		10.5	1050/	
367.00 > 322.00		2.366	0.009		441714	5.27		10.5	12586	
8 Perfluorohex				4 000	0/40/50	40.5			0010	
399.00 > 80.00		2.382	0.009	1.000	2643650	18.5			2210	
D 11 18O2 PFHx		0.000	0.001		(04754	4.55		0.7	1/007	
403.00 > 84.00		2.382	0.001		624754	4.55		9.6	16027	
* 62 13C2-PFOA		2.725	0.010		10/05	F0.0			254	
415.00 > 370.00		2.725	0.010		12685	50.0			354	
15 Perfluorooct			0.000	1 000	5004554	77.0			1000	M
413.00 > 369.00 413.00 > 169.00		2.7332.733	0.002 0.002	1.000 1.000	5991551 3754663	77.9	1.60(0.90-1.10)		1993 12098	M M
413.00 > 109.00	2.733	2.733	0.002	1.000	3/34003		1.00(0.70-1.10)		12098	IVI
					D EOO - (4	404				

Report Date: 25-Jul-2017 11:29:49
Data File: \ChromNa\Sac Chrom Revision: 2.2 26-Jun-2017 08:09:44 \\ChromNa\Sacramento\ChromData\A8 N\20170725-45831 b\2017 07 24AA 029 d

Data File:	\\Chrc	omNa\Sa	acrament	:o\Chrom	Data\A8_N\201	70725-4583	1.b\2017.07.24AA_()29.d		
Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 14 13C4 PFO	Δ									
417.00 > 372.00		2.733	0.002		360631	4.39		8.8	9723	
16 Perfluorohe	ptanesul	fonic Aci	id							
449.00 > 80.00	2.742	2.740	0.002	1.000	60564	0.6049			195	
17 Perfluorooct										
499.00 > 80.00		3.108	0.007	1.000	1727470	18.3	4.5.4(0.00.4.40)		6890	
499.00 > 99.00		3.108	0.007	1.000	380229		4.54(0.90-1.10)		2262	
20 Perfluoronor 463.00 > 419.00			0.007	1.000	16315	0.3151			35.5	
		3.108	0.007	1.000	10315	0.3151			35.5	
D 19 13C5 PFNA 468.00 > 423.00		3.108	0.007		254288	3.87		7.7	5060	
D 18 13C4 PFO		3.100	0.007		234200	3.07		7.7	3000	
503.00 > 80.00		3.108	0.007		426674	3.94		8.2	8521	
22 Perfluorooct										
498.00 > 78.00		3.457	0.016	1.000	22254	0.9087			238	
D 21 13C8 FOSA	Α									
506.00 > 78.00	3.473	3.457	0.016		135773	0.7427		1.5	1415	
24 Perfluorodeo	canoic a	cid								
513.00 > 469.00	3.482	3.467	0.015	1.000	8273	0.2447			43.9	
D 23 13C2 PFD/										
515.00 > 470.00		3.467	0.015		172546	3.09		6.2	2087	
29 Perfluorodeo										
599.00 > 80.00		3.778	0.017	1.000	9113	0.1640			306	
31 Perfluoround			0.015	1 000	5697	0.1464			9.0	
563.00 > 519.00		3.797	0.015	1.000	5097	0.1464			9.0	
D 30 13C2 PFUr 565.00 > 520.00		3.797	0.015		110145	2.70		5.4	1266	
37 Perfluorodo			0.013		110143	2.70		5.4	1200	
613.00 > 569.00		4.095	0.013	1.000	4865	0.2515			16.3	
D 36 13C2 PFD			0.0.0		.000	0.20.0			. 0.0	
615.00 > 570.00		4.095	0.013		104109	2.33		4.7	330	
41 Perfluorotrid	lecanoic									
663.00 > 619.00		4.358	0.018	1.000	5052	0.2850			12.3	
42 Perfluorotetr	radecan	oic acid								М
712.50 > 668.90	4.633	4.596	0.037	1.000	27339	0.6831			7.1	M
713.00 > 169.00	4.612	4.596	0.016	0.996	2016		13.56(0.00-0.00)		92.0	

OC Flag Legend Review Flags

M - Manually Integrated

TestAmerica Sacramento 880 Riverside Parkuay

West Sacramento, CA 95605

Chain of Custody Record

198628

TestAmerica

TestAmerica Laboratories, Inc.

Phone: 916.373.5600 Fax: Regulatory Program: DW NPDES RCRA Other: TAL-8210 (0713) Project Manager: Jeff Oriest COC No: Client Contact Site Contact: Kein Langatage Date: 7/6/17 Tel/Fax: 1(412)921-8778 Company Name: To tra Tech Lab Contact: Duind Allunke Carrier: Feel Ex COCs Address: 601 Ankran Dr. **Analysis Turnaround Time** Sampler: Vevin Lang, tos & PFC, CEMUST - LYMANS City/State/Zip: 7: Holang PA For Lab Use Only: CALENDAR DAYS WORKING DAYS 15220 Phone: 1(412) 911-8778 Walk-in Client: TAT if different from Below Perform MS / MSD (Y / N) Lab Sampling: 2 weeks Project Name: WEZI Branswick PFL Asysse 1 week Site: Former NAS Brussiack GWETS Job / SDG No. 2 days PO# 112608005-WEZI, PT.LT 1 day Sample Type Sample Sample # of Sample Identification Date Time G=Grab) Matrix Cont. Sample Specific Notes: TP-PFC-019-TPI W 4 Dan TP-PFC-019-MID-CARBON W 0916 PFC-019-TPE 140 PFC-019-TPE-D W 1103 of 1104 Preservation Used: 1= Ice, 2= HCI; 3= H2SO4; 4=HNO3; 5=NaOH; 6= Other Sample Disposal (A fee may be assessed if samples are retained longer than 1 month) Possible Hazard Identification: Are any samples from a listed EPA Hazardous Waste? Please List any EPA Waste Codes for the sample in the Comments Section if the lab is to dispose of the sample Disposal by Lab Non-Hazard Archive for Skin Irritant Poison B Unknown Return to Client Flammable Special Instructions/QC Requirements & Comments: Cooler Temp. (°C): Obs'd: 5.4 Corr'd: Custody Seal No.: Therm ID No.: A K- 2 Custody Seals Intact: Yes No Company: Received by: 7/7/17 Relinquished by Date/Time: Company 1000 7 AWY 7/6/17 1600 Relinquished by Date/Time Received by: Date/Time: Company: Relinquished by: Company: Date/Time: Received in Laboratory by: Company: Date/Time:

Login Sample Receipt Checklist

Client: Tetra Tech, Inc.

Job Number: 320-29732-1

Login Number: 29732 List Source: TestAmerica Sacramento

List Number: 1

Creator: Hytrek, Cheryl

Question	Answer	Comment
Radioactivity wasn't checked or is = background as measured by a survey meter.</td <td>True</td> <td></td>	True	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	N/A	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	N/A	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

Job Narrative 320-29732-1

Receipt

The samples were received on 7/7/2017 10:00 AM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperature of the cooler at receipt was 3.4° C.

LCMS

Method(s) 537 (Modified): The first level standard from the initial calibration curve is used to evaluate the tune criteria. The instrument mass windows are set at +/- 0.5amu; therefore, detection of the analyte serves as verification that the assigned mass is within +/- 0.5amu of the true value, which meets the DoD/DOE QSM tune criterion.

Method(s) 3535, 537 (Modified): Due to the sporadic recovery performance for the labeled analyte 13C8-FOSA, we are temporarily increasing the reporting limit (RL) for the target analyte FOSA in order to provide better confidence in its reported value. The RL for FOSA has been increased to the same concentration as that fortified into the laboratory control sample (LCS). At this concentration, the LCS demonstrates acceptable FOSA recovery regardless of the recovery of its labeled analog, 13C8-FOSA, which is used to quantitate FOSA. Thus, indicating sufficient analytical performance to support this RL increase. Techniques to improve the recovery performance of 13C8-FOSA are currently underway.

Method(s) 537 (Modified): The Isotope Dilution Analyte (IDA) recovery associated with the following samples is below the method recommended limit for 13C8 FOSA: (LCS 320-174599/2-A) and (LCSD 320-174599/3-A). Generally, data quality is not considered affected if the IDA signal-to-noise ratio is greater than 10:1, which is achieved for all IDA in the samples. Reanalysis confirms these results.

Method(s) 537 (Modified): The Isotope Dilution Analyte (IDA) recovery associated with the following samples are below the method recommended limit for 13C8 FOSA: TP-PFC-019-TPI (320-29732-1), TP-PFC-019-MID-CARBON (320-29732-2), TP-PFC-019-TPE (320-29732-3) and (LCS 320-175097/2-A). Generally, data quality is not considered affected if the IDA signal-to-noise ratio is greater than 10:1, which is achieved for all IDA in the sample. Reanalysis confirms the results.

Method(s) 537 (Modified): The laboratory control sample duplicate (LCSD) for preparation batch 320-175074 and analytical batch 320-175951 recovered outside control limits for the following analyte: Perfluorotetradecanoic acid (PFTeA). This analyte was detected in the associated samples. The samples were re-extracted, however, PFTeA in the re-extracted LCSD was also outside of control limits. Due to insufficient sample volume, further re-extraction could not be performed. Results for PFTeA were reported from the re-extraction because the Laboratory Control Sample (LCS) was in control for this analyte.

Method(s) 537 (Modified): The concentration of Perfluorooctanesulfonic acid (PFOS) and Perfluorooctanoic acid (PFOA) associated with the following sample exceeded the instrument calibration range: TP-PFC-019-TPI (320-29732-1). These analytes have been qualified; however, the peaks did not saturate the instrument detector. The sample was run at dilution and both sets of data have been reported.

Method(s) 537 (Modified): The Isotope Dilution Analyte (IDA) recovery associated with the following samples is below the method recommended limit for 13C8 FOSA: TP-PFC-019-TPE-D (320-29732-4). Reanalysis confirmed the result. Generally, data quality is not considered affected if the IDA signal-to-noise ratio is greater than 10:1, which is achieved for all IDA in the samples. All detection limits are below the lower calibration.

Method(s) 537 (Modified): The Isotope Dilution Analyte (IDA) recovery associated with the following sample is far below the method recommended limit for 13C8 FOSA: TP-PFC-019-TPE-D (320-29732-4). The sample was re-extracted outside of the recommended preparation holding time. Both sets of data have been reported.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

Organic Prep

Method(s) 3535: Approximately 250 mL of the aqueous portion of the following samples were decanted into a new polyethylene bottle prior to extraction due to the original sample bottle containing an excess amount of sediment which had the potential to clog the solid-phase column: TP-PFC-019-TPI (320-29732-1)

Method(s) 3535: Insufficient sample volume was available to perform a matrix spike/matrix spike duplicate (MS/MSD) associated with preparation batch 320-175074.

Method(s) 3535: Insufficient sample volume was available to perform a matrix spike/matrix spike duplicate (MS/MSD) associated with preparation batch 320-175742.

Method(s) 3535: The following sample was re-prepared outside of preparation holding time due to low FOSA IDA recoveries.:TP-PFC-019-TPE-D (320-29732-4).

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

Definitions/Glossary

Client: Tetra Tech, Inc.

TestAmerica Job ID: 320-29732-1

Project/Site: TT: PFAS, Brunswick, Discharge

Qualifiers

LCMS

Qualifier	Qualifier Description
Q	One or more quality control criteria failed.
M	Manual integrated compound.
U	Undetected at the Limit of Detection.
J	Estimated: The analyte was positively identified; the quantitation is an estimation
E	Result exceeded calibration range.
D	The reported value is from a dilution.
Н	Sample was prepped or analyzed beyond the specified holding time

Glossary

Glossary	
Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

Sample Summary

Client: Tetra Tech, Inc.

Project/Site: TT: PFAS, Brunswick, Discharge

Lab Sample ID Client Sample ID Matrix Collected Received 320-29732-1 07/06/17 09:11 07/07/17 10:00 TP-PFC-019-TPI Water 320-29732-2 TP-PFC-019-MID-CARBON Water 07/06/17 09:16 07/07/17 10:00 320-29732-3 TP-PFC-019-TPE Water 07/06/17 09:21 07/07/17 10:00 Water 07/06/17 00:00 07/07/17 10:00 320-29732-4 TP-PFC-019-TPE-D

TestAmerica Job ID: 320-29732-1

Method Summary

Client: Tetra Tech, Inc.

Project/Site: TT: PFAS, Brunswick, Discharge

TestAmerica Job ID: 320-29732-1

Method	Method Description	Protocol	Laboratory
537 (Modified)	Perfluorinated Hydrocarbons	EPA	TAL SAC

Protocol References:

EPA = US Environmental Protection Agency

Laboratory References:

TAL SAC = TestAmerica Sacramento, 880 Riverside Parkway, West Sacramento, CA 95605, TEL (916)373-5600

Lab Name: TestAmerica Sacramento Jo	b No.:	320-29732-1
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SDG No.:

Matrix: Water Level: Low

GC Column (1): GeminiC18 3 ID: 3 (mm)

Client Sample ID	Lab Sample ID	PFBA #	PFPeA #	PFHxA #	PFHpA #	PFHxS #	PFOA #	PFNA #	PFOS #
TP-PFC-019-TPE-D	320-29732-4	96	98	98	118	106	111	91	100
	MB 320-174599/1-A	113	112	115	148	111	136	123	105
	LCS 320-174599/2-A	100	101	102	135	97	119	109	93
	LCSD 320-174599/3-A	97	101	105	132	97	125	111	96

	QC LIMITS
PFBA = 13C4 PFBA	25-150
PFPeA = 13C5 PFPeA	25-150
PFHxA = 13C2 PFHxA	25-150
PFHpA = 13C4-PFHpA	25-150
PFHxS = 1802 PFHxS	25-150
PFOA = 13C4 PFOA	25-150
PFOS = 13C4 PFOS	25-150
PFNA = 13C5 PFNA	25-150

Column to be used to flag recovery values

FORM II 537 (Modified)

Lab Name: TestAmerica Sacramento Job No.: 320-297	32-	_	1
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SDG No.:

Matrix: Water Level: Low

GC Column (1): GeminiC18 3 ID: 3 (mm)

Client Sample ID	Lab Sample ID	PFDA #	PFOSA #	PFUnA #	PFDoA #
TP-PFC-019-TPE-D	320-29732-4	85	0.3	67	70
	MB 320-174599/1-A	138	47	137	114
	LCS 320-174599/2-A	126	17 Q	110	97
	LCSD 320-174599/3-A	128	20 Q	117	101

 $\ensuremath{\text{\#}}$ Column to be used to flag recovery values

Lab Name: TestAmerica Sacramento Jo	b No.:	320-29732-1
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SDG No.:

Matrix: Water Level: Low

GC Column (1): GeminiC18 3 ID: 3 (mm)

Client Sample ID	Lab Sample ID	PFBA #	PFPeA #	PFHxA #	PFHpA #	PFHxS #	PFOA #	PFNA #	PFOS #
TP-PFC-019-TPI	320-29732-1	77	80	71	93	87	67	66	83
TP-PFC-019-TPI DL	320-29732-1 DL	98	95	94	105	96	88	77	82
TP-PFC-019-MID-CAR BON	320-29732-2	101	102	100	116	102	102	81	99
TP-PFC-019-TPE	320-29732-3	102	98	101	118	105	102	85	102
	MB 320-175097/1-A	103	105	100	114	96	110	102	93
	LCS 320-175097/2-A	101	102	100	119	101	113	98	94
	LCSD 320-175097/3-A	111	104	105	124	108	116	105	95

	QC LIMITS
PFBA = 13C4 PFBA	25-150
PFPeA = 13C5 PFPeA	25-150
PFHxA = 13C2 PFHxA	25-150
PFHpA = 13C4-PFHpA	25-150
PFHxS = 1802 PFHxS	25-150
PFOA = 13C4 PFOA	25-150
PFOS = 13C4 PFOS	25-150
PFNA = 13C5 PFNA	25-150

 $\ensuremath{\text{\#}}$ Column to be used to flag recovery values

FORM II 537 (Modified)

Lab Name: TestAmerica Sacramento Job No.: 320-29732	2-	-	1
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SDG No.:

Matrix: Water Level: Low

GC Column (1): GeminiC18 3 ID: 3 (mm)

Client Sample ID	Lab Sample ID	PFOSA #	PFDA #	PFUnA #	PFDoA #
TP-PFC-019-TPI	320-29732-1	14 Ç	65	48	45
TP-PFC-019-TPI DL	320-29732-1 DL	15 Ç	62	54	47
TP-PFC-019-MID-CAR BON	320-29732-2	6 Ç	72	63	58
TP-PFC-019-TPE	320-29732-3	2 9	93	78	69
	MB 320-175097/1-A	51	118	98	84
	LCS 320-175097/2-A	7 Ç	120	104	86
	LCSD 320-175097/3-A	25	128	104	94

 $\ensuremath{\text{\#}}$ Column to be used to flag recovery values

FORM II 537 (Modified)

Lab Name: TestAmerica Sacramento Job No.: 320-297	32-	_	1
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SDG No.:

Matrix: Water Level: Low

GC Column (1): $\underline{\text{GeminiC18 3}}$ ID: $\underline{3}$ (mm)

Client Sample ID	Lab Sample ID	PFDoA #
TP-PFC-019-TPI RE	320-29732-1 RE	67
TP-PFC-019-MID-CAR BON RE	320-29732-2 RE	92
TP-PFC-019-TPE RE	320-29732-3 RE	87
	MB 320-175074/1-A	116
	LCS 320-175074/2-A	105
	LCSD 320-175074/3-A	106

 $\frac{\text{QC LIMITS}}{25-150}$

PFDoA = 13C2 PFDoA

do name. Testimetted sactaments	lab	Name: Te	estAmerica	Sacramento	Job No.:	320-29732	-1
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SDG No.:

Matrix: Water Level: Low

GC Column (1): GeminiC18 3 ID: 3 (mm)

Client Sample ID	Lab Sample ID	PFOSA #
TP-PFC-019-TPE-D RE	320-29732-4 RE	2 Q
	MB	63
	320-175742/1-A	
	LCS	62
	320-175742/2-A	
	LCSD	55
	320-175742/3-A	

 $\frac{QC \text{ LIMITS}}{25-150}$

PFOSA = 13C8 FOSA

FORM IV LCMS METHOD BLANK SUMMARY

Lab Name: TestAmerica Sacramento	Job No.: 320-29732-1
SDG No.:	
Lab File ID: 2017.07.21C_016.d	Lab Sample ID: MB 320-174599/1-A
Matrix: Water	Date Extracted: 07/18/2017 07:22
Instrument ID: A8_N	Date Analyzed: 07/21/2017 20:45
Level: (Low/Med) Low	

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES:

		LAB	
CLIENT SAMPLE ID	LAB SAMPLE ID	FILE ID	DATE ANALYZED
	LCS 320-174599/2-A	2017.07.21C	07/21/2017 20:52
		017.d	
	LCSD 320-174599/3-A	2017.07.21C	07/21/2017 20:59
		018.d	
TP-PFC-019-TPE-D	320-29732-4	2017.07.21C	07/21/2017 21:06
		019.d	

FORM I LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento	Job No.: 320-29/32-1
SDG No.:	
Client Sample ID:	Lab Sample ID: MB 320-174599/1-A
Matrix: Water	Lab File ID: 2017.07.21C_016.d
Analysis Method: 537 (Modified)	Date Collected:
Extraction Method: 3535	Date Extracted: 07/18/2017 07:22
Sample wt/vol: 250(mL)	Date Analyzed: 07/21/2017 20:45
Con. Extract Vol.: 0.50(mL)	Dilution Factor: 1
Injection Volume: 2(uL)	GC Column: GeminiC18 3x100 ID: 3(mm)
% Moisture:	GPC Cleanup: (Y/N) N
Analysis Batch No.: 175462	Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
375-22-4	Perfluorobutanoic acid (PFBA)	1.0	U M	2.5	1.0	0.46
2706-90-3	Perfluoropentanoic acid (PFPeA)	2.0	U	2.5	2.0	0.99
307-24-4	Perfluorohexanoic acid (PFHxA)	2.0	U	2.5	2.0	0.79
375-85-9	Perfluoroheptanoic acid (PFHpA)	2.0	Ū	2.5	2.0	0.80
335-67-1	Perfluorooctanoic acid (PFOA)	2.0	U	2.5	2.0	0.75
375-95-1	Perfluorononanoic acid (PFNA)	2.0	U	2.5	2.0	0.65
335-76-2	Perfluorodecanoic acid (PFDA)	1.0	U	2.5	1.0	0.44
2058-94-8	Perfluoroundecanoic acid (PFUnA)	2.0	U	2.5	2.0	0.75
307-55-1	Perfluorododecanoic acid (PFDoA)	2.0	U	2.5	2.0	0.58
72629-94-8	Perfluorotridecanoic Acid (PFTriA)	0.631	J	2.5	2.0	0.55
376-06-7	Perfluorotetradecanoic acid (PFTeA)	0.711	JМ	2.5	1.0	0.40
375-73-5	Perfluorobutanesulfonic acid (PFBS)	2.0	U	2.5	2.0	0.92
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	2.0	U	2.5	2.0	0.87
375-92-8	Perfluoroheptanesulfonic Acid (PFHpS)	2.0	U	2.5	2.0	0.71
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	3.0	U	4.0	3.0	1.3
335-77-3	Perfluorodecanesulfonic acid (PFDS)	3.0	U	4.0	3.0	1.2
754-91-6	Perfluorooctane Sulfonamide (FOSA)	2.0	U	40	2.0	0.64

FORM I LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento	Job No.: <u>320-29732-1</u>
SDG No.:	
Client Sample ID:	Lab Sample ID: MB 320-174599/1-A
Matrix: Water	Lab File ID: 2017.07.21C_016.d
Analysis Method: 537 (Modified)	Date Collected:
Extraction Method: 3535	Date Extracted: 07/18/2017 07:22
Sample wt/vol: 250(mL)	Date Analyzed: 07/21/2017 20:45
Con. Extract Vol.: 0.50(mL)	Dilution Factor: 1
Injection Volume: 2(uL)	GC Column: GeminiC18 3x100 ID: 3(mm)
% Moisture:	GPC Cleanup:(Y/N) N
Analysis Batch No.: 175462	Units: ng/L

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL01056	13C8 FOSA	47		25-150
STL00992	13C4 PFBA	113		25-150
STL00993	13C2 PFHxA	115		25-150
STL00990	13C4 PFOA	136		25-150
STL00995	13C5 PFNA	123		25-150
STL00996	13C2 PFDA	138		25-150
STL00997	13C2 PFUnA	137		25-150
STL00998	13C2 PFDoA	114		25-150
STL00994	1802 PFHxS	111		25-150
STL00991	13C4 PFOS	105		25-150
STL01892	13C4-PFHpA	148		25-150
STL01893	13C5 PFPeA	112		25-150

FORM III LCMS LAB CONTROL SAMPLE RECOVERY

Lab Name	ab Name: TestAmerica Sacramento		Job No.: 320-29732-1			
SDG No.	:					
Matrix:	Water	Level: Low	Lab File	ID:	2017.07.21c_017.d	
Lab ID:	LCS 320-174599/2-A		Client II):		

	SPIKE	LCS	LCS	QC	
	ADDED	CONCENTRATION	용	LIMITS	#
COMPOUND	(ng/L)	(ng/L)	REC	REC	
Perfluorobutanoic acid (PFBA)	40.0	44.8	112	60-140	
Perfluoropentanoic acid	40.0	42.2	106	60-140	
(PFPeA)					
Perfluorohexanoic acid (PFHxA)	40.0	42.7	107	60-140	
Perfluoroheptanoic acid	40.0	40.6	102	60-140	
(PFHpA)					
Perfluorooctanoic acid (PFOA)	40.0	42.1	105		
Perfluorononanoic acid (PFNA)	40.0	42.6	106		
Perfluorodecanoic acid (PFDA)	40.0	43.8	110	60-140	
Perfluoroundecanoic acid	40.0	43.8	109	60-140	
(PFUnA)					
Perfluorododecanoic acid	40.0	43.5	109	60-140	
(PFDoA)					
Perfluorotridecanoic Acid	40.0	43.4	109	50-150	
(PFTriA) Perfluorotetradecanoic acid	10.0	48.6	1.00	50-150	
(PFTeA)	40.0	48.6	122	50-150	
Perfluorobutanesulfonic acid	35.4	38.5	109	50-150	
(PFBS)	55.4	30.3	109	30-130	
Perfluorohexanesulfonic acid	36.4	38.9	107	60-140	
(PFHxS)		00.5		00 110	
Perfluoroheptanesulfonic Acid	38.1	44.7	117	50-150	
(PFHpS)					
Perfluorooctanesulfonic acid	37.1	40.0	108	60-140	
(PFOS)					
Perfluorodecanesulfonic acid	38.6	39.6	103	50-150	
(PFDS)	10.0	40.0	100	60 140	
Perfluorooctane Sulfonamide	40.0	42.9	107	60-140	
(FOSA) 13C8 FOSA	100	17.3	17	25-150	0
13C4 PFBA	100	99.7	100		Q
13C4 PFBA				25-150	
	100	102	102		
13C4 PFOA	100	119	119	25-150	
13C5 PFNA	100	109	109	25-150	
13C2 PFDA	100	126	126	25-150	
13C2 PFUnA	100	110	110		
13C2 PFDoA	100	96.6	97	25-150	
1802 PFHxS	94.6	91.8	97	25-150	
13C4 PFOS	95.6	89.3	93	25-150	
13C4-PFHpA	100	135	135	25-150	
13C5 PFPeA	100	101	101	25-150	

[#] Column to be used to flag recovery and RPD values FORM III 537 (Modified)

FORM III LCMS LAB CONTROL SAMPLE DUPLICATE RECOVERY

Lab Name	: TestAmerica Sac	cramento		Job	No.:	320-	-29732-1
SDG No.:							
Matrix:	Water	Level:	Low	Lab	File	ID:	2017.07.21c_018.d

Lab ID: LCSD 320-174599/3-A Client ID:

	SPIKE	LCSD	LCSD		QC LI	MITS	
	ADDED	CONCENTRATION	용	8 -			#
COMPOUND	(ng/L)	(ng/L)	REC	RPD	RPD	REC	
Perfluorobutanoic acid (PFBA)	40.0	47.2	118	5	30	60-140	
Perfluoropentanoic acid	40.0	43.9	110	4	30	60-140	
(PFPeA)							
Perfluorohexanoic acid (PFHxA)	40.0	42.9	107		30	60-140	
Perfluoroheptanoic acid	40.0	43.3	108	6	30	60-140	
(PFHpA)	4.0.0	40.0	100		2.0	60 140	
Perfluorooctanoic acid (PFOA)	40.0	42.9	107	2	30	60-140	
Perfluorononanoic acid (PFNA)	40.0	42.8	107	1	30	60-140	
Perfluorodecanoic acid (PFDA)	40.0	42.5	106		30	60-140	
Perfluoroundecanoic acid	40.0	40.6	101	8	30	60-140	
(PFUnA) Perfluorododecanoic acid	40.0	43.8	109	1	30	60-140	
(PFDoA)	40.0	43.0	109	1	30	80-140	
Perfluorotridecanoic Acid	40.0	46.6	117	7	30	50-150	
(PFTriA)							
Perfluorotetradecanoic acid	40.0	49.4	123	2	30	50-150	
(PFTeA)							
Perfluorobutanesulfonic acid	35.4	37.4	106	3	30	50-150	
(PFBS)	2.6.4	20.5	100		2.0	60 140	
Perfluorohexanesulfonic acid	36.4	38.5	106	1	30	60-140	
(PFHxS) Perfluoroheptanesulfonic Acid	38.1	41.6	109	7	30	50-150	
(PFHpS)	50.1	41.0		'	30	30 130	
Perfluorooctanesulfonic acid	37.1	39.2	106	2	30	60-140	
(PFOS)							
Perfluorodecanesulfonic acid	38.6	38.4	100	3	30	50-150	
(PFDS)							
Perfluorooctane Sulfonamide	40.0	43.3	108	1	30	60-140	
(FOSA) 13C8 FOSA	100	20.3	20			25-150	0
13C4 PFBA	100	97.0	97	-		25-150	Q
13C4 FFBA 13C2 PFHxA	100	105	105			25-150	
13C4 PFOA	100	125	125			25-150	
13C4 PFOA 13C5 PFNA	100	123	111			25-150	
13C3 PFNA 13C2 PFDA	100	128	128			25-150	
13C2 PFDA 13C2 PFUnA	100	128	128			25-150	
13C2 PFDoA	100	101	101 97			25-150	
1802 PFHxS	94.6		-			25-150	
13C4 PFOS	95.6	91.5	96			25-150	
13C4-PFHpA	100	132	132			25-150	
13C5 PFPeA	100	101	101			25-150	

[#] Column to be used to flag recovery and RPD values
FORM III 537 (Modified)

FORM IV LCMS METHOD BLANK SUMMARY

Lab Name: TestAmerica Sacramento	Job No.: 320-29732-1
SDG No.:	
Lab File ID: 2017.07.25B_002.d	Lab Sample ID: MB 320-175074/1-A
Matrix: Water	Date Extracted: 07/20/2017 09:15
Instrument ID: A8_N	Date Analyzed: 07/25/2017 14:17
Level: (Low/Med) Low	

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES:

		LAB	
CLIENT SAMPLE ID	LAB SAMPLE ID	FILE ID	DATE ANALYZED
	LCS 320-175074/2-A	2017.07.25B	07/25/2017 14:24
		003.d	
	LCSD 320-175074/3-A	2017.07.25B	07/25/2017 14:31
		004.d	
TP-PFC-019-TPI RE	320-29732-1 RE	2017.07.25B	07/25/2017 15:05
		009.d	
TP-PFC-019-MID-CARBON RE	320-29732-2 RE	2017.07.25B	07/25/2017 15:12
		010.d	
TP-PFC-019-TPE RE	320-29732-3 RE	2017.07.25B	07/25/2017 15:19
		011.d	

FORM I LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento 3			Job No.: 320-29732-1					
SDG No.:								
Client Sample	e ID:	Lab Sa	mple ID:	: MB 320-1	75074/1-2	A		
Matrix: Water		 Lab Fi	le ID: 2	2017.07.25	3_002.d			
Analysis Meth	nod: 537 (Modified)	 Date C	- Collected	d:				
Extraction Me	ethod: 3535	 Date E	xtracted	d: 07/20/2	2017 09	:15		
Sample wt/vol	250.00(mL)	 Date A	nalyzed	: 07/25/201	17 14:1	7		
Con. Extract	Vol.: 0.50(mL)	 Diluti	Dilution Factor: 1					
Injection Vol	GC Col	GC Column: GeminiC18 3x100 ID: 3(mm)						
% Moisture:		GPC Cl	GPC Cleanup: (Y/N) N					
Analysis Bato	h No.: 175951	 Units:	Units: ng/L					
CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL		
376-06-7	Perfluorotetradecanoic acid (PFTeA)	0.807	JМ	2.5	1.	0.40		
						·		
CAS NO. ISOTOPE DILUTION				%REC	Q	LIMITS		
STL00998 13C2 PFDoA				116		25-150		

FORM III LCMS LAB CONTROL SAMPLE RECOVERY

Lab Name	e: TestAmerica Sacra	amento	Job No.:	320-	-29732-1
SDG No.	:				
Matrix:	Water	Level: Low	Lab File	ID:	2017.07.25B_003.d
Lab ID:	LCS 320-175074/2-A		Client I	D:	

	SPIKE ADDED	LCS CONCENTRATION	LCS	QC LIMITS	#
COMPOUND	(ng/L)	(ng/L)	REC	REC	
Perfluorotetradecanoic acid (PFTeA)	40.0	58.6	146	50-150	
13C2 PFDoA	100	105	105	25-150	

[#] Column to be used to flag recovery and RPD values FORM III 537 (Modified)

FORM III LCMS LAB CONTROL SAMPLE DUPLICATE RECOVERY

Lab Nam	e: TestAmerica Sacr	camento	Job No.:	320-29732-1
SDG No.	:			
Matrix:	Water	Level: Low	Lab File	ID: 2017.07.25B_004.d
Lab ID:	LCSD 320-175074/3-	-A	Client ID):

	SPIKE	LCSD	LCSD		QC L1	IMITS	
	ADDED	CONCENTRATION	%	%		<u> </u>	#
COMPOUND	(ng/L)	(ng/L)	REC	RPD	RPD	REC	
Perfluorotetradecanoic acid (PFTeA)	40.0	64.6	162	10	30	50-150	Q
13C2 PFDoA	100	106	106			25-150	

[#] Column to be used to flag recovery and RPD values FORM III 537 (Modified)

FORM IV LCMS METHOD BLANK SUMMARY

Lab Name: TestAmerica Sacramento	Job No.: 320-29732-1
SDG No.:	
Lab File ID: 2017.07.23A_002.d	Lab Sample ID: MB 320-175097/1-A
Matrix: Water	Date Extracted: 07/20/2017 10:13
Instrument ID: A8_N	Date Analyzed: 07/23/2017 14:39
Level:(Low/Med) Low	

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES:

		LAB	
CLIENT SAMPLE ID	LAB SAMPLE ID	FILE ID	DATE ANALYZED
	LCS 320-175097/2-A	2017.07.23A	07/23/2017 14:46
		003.d	
	LCSD 320-175097/3-A	2017.07.23A	07/23/2017 14:53
		004.d	
TP-PFC-019-TPI	320-29732-1	2017.07.23A	07/23/2017 16:16
		016.d	
TP-PFC-019-TPE	320-29732-3	2017.07.23A	07/23/2017 16:30
		018.d	
TP-PFC-019-TPI DL	320-29732-1 DL	2017.07.24A	07/24/2017 20:07
		A 029.d	
TP-PFC-019-MID-CARBON	320-29732-2	2017.07.24A	07/24/2017 20:14
		A_030.d	

FORM I LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento	Job No.: <u>320-29732-1</u>
SDG No.:	
Client Sample ID:	Lab Sample ID: MB 320-175097/1-A
Matrix: Water	Lab File ID: 2017.07.23A_002.d
Analysis Method: 537 (Modified)	Date Collected:
Extraction Method: 3535	Date Extracted: 07/20/2017 10:13
Sample wt/vol: 250(mL)	Date Analyzed: 07/23/2017 14:39
Con. Extract Vol.: 0.50(mL)	Dilution Factor: 1
Injection Volume: 2(uL)	GC Column: GeminiC18 3x100 ID: 3(mm)
% Moisture:	GPC Cleanup:(Y/N) N
Analysis Batch No · 175528	Units: na/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
375-22-4	Perfluorobutanoic acid (PFBA)	1.0	Ŭ	2.5	1.0	0.46
2706-90-3	Perfluoropentanoic acid (PFPeA)	2.0	U	2.5	2.0	0.99
307-24-4	Perfluorohexanoic acid (PFHxA)	2.0	U	2.5	2.0	0.79
375-85-9	Perfluoroheptanoic acid (PFHpA)	2.0	U	2.5	2.0	0.80
335-67-1	Perfluorooctanoic acid (PFOA)	2.0	U	2.5	2.0	0.75
375-95-1	Perfluorononanoic acid (PFNA)	2.0	U	2.5	2.0	0.65
335-76-2	Perfluorodecanoic acid (PFDA)	1.0	U	2.5	1.0	0.44
2058-94-8	Perfluoroundecanoic acid (PFUnA)	2.0	U	2.5	2.0	0.75
307-55-1	Perfluorododecanoic acid (PFDoA)	2.0	U	2.5	2.0	0.58
72629-94-8	Perfluorotridecanoic Acid (PFTriA)	2.0	U	2.5	2.0	0.55
375-73-5	Perfluorobutanesulfonic acid (PFBS)	2.0	U	2.5	2.0	0.92
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	2.0	U	2.5	2.0	0.87
375-92-8	Perfluoroheptanesulfonic Acid (PFHpS)	2.0	U	2.5	2.0	0.71
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	3.0	U	4.0	3.0	1.3
335-77-3	Perfluorodecanesulfonic acid (PFDS)	3.0	U	4.0	3.0	1.2
754-91-6	Perfluorooctane Sulfonamide (FOSA)	2.0	U	40	2.0	0.64

FORM I LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-29732-1 SDG No.: Client Sample ID: _____ Lab Sample ID: MB 320-175097/1-A Matrix: Water Lab File ID: 2017.07.23A_002.d Analysis Method: 537 (Modified) Date Collected: ____ Extraction Method: 3535 Date Extracted: 07/20/2017 10:13 Sample wt/vol: 250(mL) Date Analyzed: 07/23/2017 14:39 Con. Extract Vol.: 0.50(mL) Dilution Factor: 1 Injection Volume: 2(uL) GC Column: GeminiC18 3x100 ID: 3(mm) % Moisture: GPC Cleanup:(Y/N) N Analysis Batch No.: 175528 Units: ng/L

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL01056	13C8 FOSA	51		25-150
STL00992	13C4 PFBA	103		25-150
STL00993	13C2 PFHxA	100		25-150
STL00990	13C4 PFOA	110		25-150
STL00995	13C5 PFNA	102		25-150
STL00996	13C2 PFDA	118		25-150
STL00997	13C2 PFUnA	98		25-150
STL00998	13C2 PFDoA	84		25-150
STL00994	1802 PFHxS	96		25-150
STL00991	13C4 PFOS	93		25-150
STL01892	13C4-PFHpA	114		25-150
STL01893	13C5 PFPeA	105		25-150

FORM III LCMS LAB CONTROL SAMPLE RECOVERY

Lab Nam	e: <u>TestAmerica Sacr</u>	amento	Job No.: 3	320-29732-1
SDG No.	:			
Matrix:	Water	Level: Low	Lab File I	D: 2017.07.23A_003.d
Lab ID:	LCS 320-175097/2-A		Client ID:	

COMPOUND		SPIKE	LCS	LCS	QC	
Perfluorobutanoic acid (PFBA)		ADDED	CONCENTRATION	용		#
Perfluoropentanoic acid 40.0 40.4 101 60-140 PerfeA Perfluorobexanoic acid (PFHXA) 40.0 41.9 105 60-140 Perfluorobexanoic acid (PFHXA) 40.0 42.1 105 60-140 Perfluorobetanoic acid (PFDA) 40.0 39.8 100 60-140 Perfluoroctanoic acid (PFDA) 40.0 39.8 100 60-140 Perfluorononanoic acid (PFDA) 40.0 42.2 105 60-140 Perfluorodecanoic acid (PFDA) 40.0 42.2 105 60-140 Perfluorodecanoic acid (PFDA) 40.0 41.4 104 60-140 Perfluorodecanoic acid (PFDA) 40.0 41.4 104 60-140 Perfluorodecanoic acid (PFDA) 40.0 46.3 116 60-140 Perfluorodecanoic acid (PFDA) 40.0 54.0 135 50-150 Perfluorotridecanoic acid (PFDA) 40.0 54.0 35.8 50-150 Perfluorobexanesulfonic acid (PFBS) 44.5 117 50-150 Perfluorobexanesulfonic acid (PFBS) 44.5 117 50-150 Perfluorobexanesulfonic acid (PFHXS) 44.5 117 50-150 Perfluorodecanesulfonic acid (PFDS) 44.5 110 50-150 Perfluorodecanesulfonic acid (PFDS) 40.0 43.1 108 60-140 PERFS 40.0 43.1 108 60-140 PERFS 40.0	COMPOUND	(ng/L)	(ng/L)	REC	REC	
Perfluorohexanoic acid (PFHXA)	Perfluorobutanoic acid (PFBA)			110	60-140	
Perfluorohexanoic acid (PFHxA)	Perfluoropentanoic acid	40.0	40.4	101	60-140	
Perfluoroheptanoic acid 40.0 42.1 105 60-140 (PFFBA) Perfluorocotanoic acid (PFOA) 40.0 39.8 100 60-140 Perfluorononanoic acid (PFNA) 40.0 42.2 105 60-140 Perfluorodecanoic acid (PFNA) 40.0 42.2 105 60-140 Perfluorodecanoic acid (PFDA) 40.0 42.6 107 60-140 Perfluoroundecanoic acid (PFDA) 40.0 41.4 104 60-140 (PFUNA) 40.0 46.3 116 60-140 (PFUNA) 40.0 46.3 116 60-140 (PFDA) 40.0 46.3 116 60-140 (PFDA) 40.0	· - /					
Perfluoronanoic acid (PFOA)		40.0	41.9			
Perfluorononanoic acid (PFNA) 40.0 42.2 105 60-140 Perfluorodecanoic acid (PFDA) 40.0 42.6 107 60-140 Perfluoroundecanoic acid (PFDA) 40.0 41.4 104 60-140 Perfluoroundecanoic acid (PFDA) 40.0 46.3 116 60-140 Perfluorododecanoic acid (PFDA) 40.0 46.3 116 60-140 Perfluorotridecanoic Acid (PFDA) 40.0 54.0 135 50-150 Perfluorotridecanoic Acid (PFTTIA) 40.0 40.0 40.0 40.0 Perfluorobutanesulfonic acid (PFTTIA) 40.0 40.0 40.0 Perfluorohexanesulfonic acid (PFDS) 40.0 40.0 Perfluorohexanesulfonic acid (PFDS) 40.0 40.0 Perfluoroctanesulfonic acid (PFDS) 40.0 40.0 Perfluorodecanesulfonic acid (PFDS) 40.0 40.0 Perfluoroctane Sulfonamide 40.0 43.1 108 60-140 Perfluoroctane Sulfonamide 40.0 40.0 40.0 Perf	(PFHpA)	40.0				
Perfluorodecanoic acid (PFDA) 40.0 42.6 107 60-140	Perfluorooctanoic acid (PFOA)	40.0		100		
Perfluoroundecanoic acid	Perfluorononanoic acid (PFNA)	40.0				
Perfluorodecanoic acid 40.0 46.3 116 60-140 (PFDOA) Perfluorotridecanoic Acid 40.0 54.0 135 50-150 (PFTriA) Perfluorobutanesulfonic acid 35.4 39.2 111 50-150 (PFTS) Perfluorohexanesulfonic acid 36.4 35.8 98 60-140 (PFHXS) Perfluorohexanesulfonic Acid 38.1 44.5 117 50-150 (PFHXS) Perfluoroctanesulfonic Acid 37.1 38.2 103 60-140 (PFHS) Perfluorodecanesulfonic acid 37.1 38.2 103 60-140 (PFOS) Perfluorodecanesulfonic acid 38.6 42.5 110 50-150 (PFDS) Perfluoroctane Sulfonamide 40.0 43.1 108 60-140 (POSA) 1308 FOSA 100 6.86 7 25-150 20 1304 PFDA 100 101 101 25-150 1302 PFHXA 100 100 100 25-150 1302 PFDA 100 100 97.6 98 25-150 1302 PFDA 100 104 104 25-150 1302 PFDA 100 104 104 25-150 1302 PFDA 100 104 104 25-150 1302 PFDA 100 85.8 86 25-150 1302 PFDA 100 85.8 86 25-150 1304 PFOS 94.6 95.7 101 25-150 1304 PFOS 95.6 89.9 94 25-150 1304 PFOS 1304 PFOS 95.6 89.9 94 25-150 1304 PFOS 100 10		40.0	42.6			
Perfluorotridecanoic Acid 40.0 54.0 135 50-150 (PFTriA) Perfluorotridecanoic Acid 40.0 54.0 135 50-150 (PFTriA) Perfluorobutanesulfonic acid 35.4 39.2 111 50-150 (PFBS) Perfluorohexanesulfonic acid 36.4 35.8 98 60-140 (PFHxS) Perfluorohexanesulfonic Acid 38.1 44.5 117 50-150 (PFHpS) Perfluoroctanesulfonic acid 37.1 38.2 103 60-140 (PFOS) Perfluorodecanesulfonic acid 38.6 42.5 110 50-150 (PFDS) Perfluoroctane Sulfonamide 40.0 43.1 108 60-140 (POSA) 1308 FOSA 100 6.86 7 25-150 2 1304 PFBA 100 101 101 25-150 1304 PFOA 100 113 113 25-150 1305 PFNA 100 101 101 25-150 1305 PFNA 100 97.6 98 25-150 1302 PFDA 100 104 104 25-150 1302 PFDA 100 104 104 25-150 1302 PFDA 100 104 104 25-150 1302 PFDA 100 85.8 86 25-150 1304 PFOS 95.6 89.9 94 25-150 1304 PFOS 95.6 89.9 94 25-150 1304 PFOS 95.6 89.9 94 25-150 1304 PFOS 1304 PFOS 95.6 89.9 94 25-150 1304 PFOS 1304 PFOS 100 119 119 25-150 1304 PFOS 1304 PFOS 100 119 119 25-150 1304 PFOS 13	I	40.0	41.4	104	60-140	
Perfluorotridecanoic Acid (PFTriA)		40.0	46.3	116	60-140	
Perfluorobutanesulfonic acid (PFBS) 35.4 39.2 111 50-150 (PFBS) 25-150 (PFBS) 25-150 (Perfluorotridecanoic Acid	40.0	54.0	135	50-150	
(PFHxS) 2 38.1 44.5 117 50-150 (PFHpS) 38.1 44.5 117 50-150 Perfluorooctanesulfonic acid (PFOS) 37.1 38.2 103 60-140 Perfluorodecanesulfonic acid (PFDS) 38.6 42.5 110 50-150 Perfluorooctane Sulfonamide (FOSA) 40.0 43.1 108 60-140 (FOSA) 100 6.86 7 25-150 Q 13C4 PFBA 100 101 101 25-150 Q 13C2 PFHxA 100 100 100 25-150 1 13C4 PFOA 100 113 113 25-150 2 13C2 PFNA 100 97.6 98 25-150 13C2 PFDA 100 120 120 25-150 13C2 PFDAA 100 104 104 25-150 13C2 PFDAA 100 85.8 86 25-150 1802 PFHxS 94.6 95.7 101 25-150 1802 PFHxS 94.6 95.7 101 25-150 <	I	35.4	39.2	111	50-150	
Perfluoroheptanesulfonic Acid (PFHpS) Perfluorooctanesulfonic acid (PFHpS)		36.4	35.8	98	60-140	
Perfluorooctanesulfonic acid (PFOS) 37.1 38.2 103 60-140 Perfluorodecanesulfonic acid (PFDS) 38.6 42.5 110 50-150 Perfluorooctane Sulfonamide (FOSA) 40.0 43.1 108 60-140 13C8 FOSA 100 6.86 7 25-150 Q 13C4 PFBA 100 101 101 25-150 13C2 PFHxA 100 100 100 25-150 13C4 PFOA 100 97.6 98 25-150 13C2 PFDA 100 97.6 98 25-150 13C2 PFDA 100 104 104 25-150 13C2 PFUnA 100 85.8 86 25-150 13C2 PFDOA 100 85.8 86 25-150 1802 PFHxS 94.6 95.7 101 25-150 13C4 PFOS 95.6 89.9 94 25-150 13C4-PFHpA 100 119 119 25-150	Perfluoroheptanesulfonic Acid	38.1	44.5	117	50-150	
(PFDS) 40.0 43.1 108 60-140 (FOSA) 13C8 FOSA 100 6.86 7 25-150 Q 13C4 PFBA 100 101 101 25-150 13C2 PFHXA 100 100 100 25-150 13C4 PFOA 100 113 113 25-150 13C5 PFNA 100 97.6 98 25-150 13C2 PFDA 100 120 120 25-150 13C2 PFUA 100 104 104 25-150 13C2 PFDA 100 85.8 86 25-150 13C2 PFDA 100 85.8 86 25-150 13C2 PFDA 100 85.8 86 25-150 13C2 PFDAS 94.6 95.7 101 25-150 13C4 PFOS 95.6 89.9 94 25-150 13C4-PFHpA 100 119 119 25-150	Perfluorooctanesulfonic acid	37.1	38.2	103	60-140	
(FOSA) 100 6.86 7 25-150 Q 13C4 PFBA 100 101 101 25-150 13C2 PFHxA 100 100 100 25-150 13C4 PFOA 100 113 113 25-150 13C5 PFNA 100 97.6 98 25-150 13C2 PFDA 100 120 120 25-150 13C2 PFUNA 100 104 104 25-150 13C2 PFDOA 100 85.8 86 25-150 18O2 PFHxS 94.6 95.7 101 25-150 13C4 PFOS 95.6 89.9 94 25-150 13C4-PFHpA 100 119 119 25-150		38.6	42.5	110	50-150	
13C4 PFBA 100 101 101 25-150 13C2 PFHxA 100 100 100 25-150 13C4 PFOA 100 113 113 25-150 13C5 PFNA 100 97.6 98 25-150 13C2 PFDA 100 120 120 25-150 13C2 PFUnA 100 104 104 25-150 13C2 PFDOA 100 85.8 86 25-150 18O2 PFHxS 94.6 95.7 101 25-150 13C4 PFOS 95.6 89.9 94 25-150 13C4-PFHpA 100 119 119 25-150		40.0	43.1	108	60-140	
13C2 PFHxA 100 100 25-150 13C4 PFOA 100 113 113 25-150 13C5 PFNA 100 97.6 98 25-150 13C2 PFDA 100 120 120 25-150 13C2 PFUnA 100 104 104 25-150 13C2 PFDOA 100 85.8 86 25-150 18O2 PFHxS 94.6 95.7 101 25-150 13C4 PFOS 95.6 89.9 94 25-150 13C4-PFHpA 100 119 119 25-150	13C8 FOSA	100	6.86	7		Q
13C4 PFOA 100 113 113 25-150 13C5 PFNA 100 97.6 98 25-150 13C2 PFDA 100 120 120 25-150 13C2 PFUNA 100 104 104 25-150 13C2 PFDOA 100 85.8 86 25-150 18O2 PFHxS 94.6 95.7 101 25-150 13C4 PFOS 95.6 89.9 94 25-150 13C4-PFHpA 100 119 119 25-150	13C4 PFBA	100	101	101	25-150	
13C5 PFNA 100 97.6 98 25-150 13C2 PFDA 100 120 120 25-150 13C2 PFUnA 100 104 104 25-150 13C2 PFDOA 100 85.8 86 25-150 18O2 PFHxS 94.6 95.7 101 25-150 13C4 PFOS 95.6 89.9 94 25-150 13C4-PFHpA 100 119 119 25-150	13C2 PFHxA	100	100	100	25-150	
13C2 PFDA 100 120 25-150 13C2 PFUnA 100 104 104 25-150 13C2 PFDOA 100 85.8 86 25-150 18O2 PFHxS 94.6 95.7 101 25-150 13C4 PFOS 95.6 89.9 94 25-150 13C4-PFHpA 100 119 119 25-150	13C4 PFOA	100	113	113	25-150	
13C2 PFUnA 100 104 104 25-150 13C2 PFDoA 100 85.8 86 25-150 18O2 PFHxS 94.6 95.7 101 25-150 13C4 PFOS 95.6 89.9 94 25-150 13C4-PFHpA 100 119 119 25-150	13C5 PFNA	100	97.6	98	25-150	
13C2 PFDoA 100 85.8 86 25-150 18O2 PFHxS 94.6 95.7 101 25-150 13C4 PFOS 95.6 89.9 94 25-150 13C4-PFHpA 100 119 119 25-150	13C2 PFDA	100	120	120	25-150	
1802 PFHxS 94.6 95.7 101 25-150 13C4 PFOS 95.6 89.9 94 25-150 13C4-PFHpA 100 119 119 25-150	13C2 PFUnA	100	104	104	25-150	
13C4 PFOS 95.6 89.9 94 25-150 13C4-PFHpA 100 119 119 25-150	13C2 PFDoA	100	85.8	86		
13C4-PFHpA 100 119 119 25-150	1802 PFHxS	94.6	95.7	101	25-150	
	13C4 PFOS	95.6	89.9	94	25-150	
13C5 PFPeA 100 102 102 25-150	13C4-PFHpA	100	119	119		
	13C5 PFPeA	100	102	102	25-150	

[#] Column to be used to flag recovery and RPD values FORM III 537 (Modified)

FORM III LCMS LAB CONTROL SAMPLE DUPLICATE RECOVERY

Lab Name:	TestAmerica Sacr	ramento Jo	bb No.:	320-	-29732-1	
SDG No.:						
Matrix: Wa	ater	Level: Low La	ab File	ID:	2017.07.23A	004.d

Lab ID: LCSD 320-175097/3-A Client ID: 2017.07.23A_004.d

	SPIKE ADDED	LCSD CONCENTRATION	LCSD	96	QC LI	MITS	#
COMPOUND	(ng/L)	(ng/L)	REC	RPD	RPD	REC	#
Perfluorobutanoic acid (PFBA)	40.0	45.8	114	4	30	60-140	
Perfluoropentanoic acid (PFPeA)	40.0	43.1	108	6	30	60-140	
Perfluorohexanoic acid (PFHxA)	40.0	43.2	108	3	30	60-140	
Perfluoroheptanoic acid (PFHpA)	40.0	42.3	106		30	60-140	
Perfluorooctanoic acid (PFOA)	40.0	41.6	104		30	60-140	
Perfluorononanoic acid (PFNA)	40.0	40.9	102	- 1	30	60-140	
Perfluorodecanoic acid (PFDA)	40.0	39.8	100		30	60-140	
Perfluoroundecanoic acid (PFUnA)	40.0	42.6	107		30	60-140	
Perfluorododecanoic acid (PFDoA)	40.0	45.0	113	3	30	60-140	
Perfluorotridecanoic Acid (PFTriA)	40.0	48.6	122	10	30	50-150	
Perfluorobutanesulfonic acid (PFBS)	35.4	39.5	112	1	30	50-150	
Perfluorohexanesulfonic acid (PFHxS)	36.4	35.3	97	1	30	60-140	
Perfluoroheptanesulfonic Acid (PFHpS)	38.1	45.3	119	2	30	50-150	
Perfluorooctanesulfonic acid (PFOS)	37.1	41.3	111	8	30	60-140	
Perfluorodecanesulfonic acid (PFDS)	38.6	43.3	112	2	30	50-150	
Perfluorooctane Sulfonamide (FOSA)	40.0	44.6	112	3	30	60-140	
13C8 FOSA	100	25.1	25			25-150	
13C4 PFBA	100	111	111			25-150	
13C2 PFHxA	100	105	105			25-150	
13C4 PFOA	100	116	116			25-150	
13C5 PFNA	100	105	105			25-150	
13C2 PFDA	100	128	128			25-150	
13C2 PFUnA	100	104	104			25-150	
13C2 PFDoA	100	93.7	94			25-150	
1802 PFHxS	94.6	103	108			25-150	
13C4 PFOS	95.6	91.2	95			25-150	
13C4-PFHpA	100	124	124			25-150	
13C5 PFPeA	100	104	104			25-150	

[#] Column to be used to flag recovery and RPD values
FORM III 537 (Modified)

FORM IV LCMS METHOD BLANK SUMMARY

Lab Name: TestAmerica Sacramento	Job No.: 320-29732-1
SDG No.:	
Lab File ID: 2017.07.27C_002.d	Lab Sample ID: MB 320-175742/1-A
Matrix: Water	Date Extracted: 07/25/2017 09:12
Instrument ID: A8_N	Date Analyzed: 07/27/2017 20:55
Level:(Low/Med) Low	

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES:

		LAB	
CLIENT SAMPLE ID	LAB SAMPLE ID	FILE ID	DATE ANALYZED
	LCS 320-175742/2-A	2017.07.27C	07/27/2017 21:02
		003.d	
	LCSD 320-175742/3-A	2017.07.27C	07/27/2017 21:09
		004.d	
TP-PFC-019-TPE-D RE	320-29732-4 RE	2017.07.27C	07/27/2017 22:18
		014.d	

FORM I LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: Tes	stAmerica Sacramento	Job No	·: <u>320-</u>	29732-1			
SDG No.:							
Client Sample	e ID:	Lab Sa	mple ID	: MB 320-1	75742/1-2	A	
Matrix: Water	:	Lab Fi	Lab File ID: 2017.07.27C_002.d				
Analysis Method: 537 (Modified) Date Colle			ollecte	d:			
Extraction Me	Date E	xtracte	d: 07/25/	2017 09:	:12		
Sample wt/vol	Date A	Date Analyzed: 07/27/2017 20:55					
Con. Extract	 Diluti	Dilution Factor: 1					
Injection Vol	GC Col	GC Column: GeminiC18 3x100 ID: 3 (mm)					
% Moisture:		GPC Cl	eanup: (Y/N) N			
Analysis Bato	ch No.: 176487	Units:	ng/L				
CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL	
754-91-6	Perfluorooctane Sulfonamide (FOSA)	2.0	U	40	2.0	0.64	
CAS NO.	ISOTOPE DILU	JTION		%REC	Q	LIMITS	
STL01056	13C8 FOSA			63		25-150	

FORM III LCMS LAB CONTROL SAMPLE RECOVERY

Lab Nam	e: TestAmerica Sacr	amento	Job No.: 320)-29732-1
SDG No.	:			
Matrix:	Water	Level: Low	Lab File ID:	: 2017.07.27c_003.d
Lab ID:	LCS 320-175742/2-A		Client ID:	

	SPIKE ADDED	LCS CONCENTRATION	LCS %	QC LIMITS	#
COMPOUND	(ng/L)	(ng/L)	REC	REC	
Perfluorooctane Sulfonamide (FOSA)	40.0	44.4	111	60-140	
13C8 FOSA	100	62.0	62	25-150	

[#] Column to be used to flag recovery and RPD values FORM III 537 (Modified)

FORM III LCMS LAB CONTROL SAMPLE DUPLICATE RECOVERY

Lab Name	e: <u>TestAmerica Sacr</u>	amento	Job No.: 3	20-29732-1
SDG No.	:			
Matrix:	Water	Level: Low	Lab File I	D: <u>2017.07.27</u> C_004.d
Lab ID:	LCSD 320-175742/3-	A	Client ID:	

	SPIKE	LCSD	LCSD		QC L1	IMITS	
	ADDED CONCENTRATION		용	용			#
COMPOUND	(ng/L)	(ng/L)	REC	RPD	RPD	REC	
Perfluorooctane Sulfonamide (FOSA)	40.0	45.0	112	1	30	60-140	
13C8 FOSA	100	55.3	55			25-150	

[#] Column to be used to flag recovery and RPD values FORM III 537 (Modified)

LCMS ANALYSIS RUN LOG

Lab Name: TestAmerica Sacramento	Job No.: 320-29732-1
SDG No.:	
Instrument ID: A8_N	Start Date: 07/20/2017 17:08
Analysis Batch Number: 175252	End Date: 07/20/2017 18:18

LAB SAMPLE ID	CLIENT SAMPLE ID	DATE ANALYZED	DILUTION FACTOR	LAB FILE ID	COLUMN ID
7.7.7.7.		07/20/2017 17:08	1		GeminiC18 3x100 3(mm)
IC 320-175252/3		07/20/2017 17:15	1	2017.07.20ICAL_ 003.d	GeminiC18 3x100 3 (mm)
IC 320-175252/4		07/20/2017 17:22	1	2017.07.20ICAL_ 004.d	GeminiC18 3x100 3 (mm)
IC 320-175252/5		07/20/2017 17:29	1	2017.07.20ICAL_ 005.d	GeminiC18 3x100 3(mm)
IC 320-175252/6		07/20/2017 17:36	1	2017.07.20ICAL_ 006.d	GeminiC18 3x100 3(mm)
IC 320-175252/7		07/20/2017 17:43	1	2017.07.20ICAL_ 007.d	GeminiC18 3x100 3(mm)
IC 320-175252/8		07/20/2017 17:50	1	2017.07.20ICAL_ 008.d	GeminiC18 3x100 3(mm)
IC 320-175252/9		07/20/2017 17:57	1	2017.07.20ICAL_ 009.d	GeminiC18 3x100 3(mm)
IC 320-175252/10		07/20/2017 18:04	1	2017.07.20ICAL_ 010.d	GeminiC18 3x100 3(mm)
ICB 320-175252/11		07/20/2017 18:11	1		GeminiC18 3x100 3(mm)
ICV 320-175252/12		07/20/2017 18:18	1	2017.07.20ICAL_ 012.d	GeminiC18 3x100 3(mm)

LCMS BY EXTERNAL STANDARD - INITIAL CALIBRATION DATA CURVE EVALUATION

Lab Name: TestAmerica Sacramento Job No.: 320-29732-1 Analy Batch No.: 175252

SDG No.:

Instrument ID: A8_N GC Column: GeminiC18 3 ID: 3(mm) Heated Purge: (Y/N) N

Calibration Files:

LEVEL:	LAB SAMPLE ID:	LAB FILE ID:	
Level 1	IC 320-175252/3	2017.07.20ICAL 003.d	
Level 2	IC 320-175252/4	2017.07.20ICAL 004.d	
Level 3	IC 320-175252/5	2017.07.20ICAL 005.d	
Level 4	IC 320-175252/6	2017.07.20ICAL 006.d	
Level 5	IC 320-175252/7	2017.07.20ICAL 007.d	
Level 6	IC 320-175252/8	2017.07.20ICAL 008.d	
Level 7	IC 320-175252/9	2017.07.20ICAL 009.d	

ANALYTE		CE	יָּ		CURVE		COEFFICIENT	#	MIN CF	%RSD			# MIN R^2
	LVL 1 LVL 5	LVL 2 LVL 6	LVL 3 LVL 7	LVL 4	TYPE	В	M1	M2			%RS	D OR COD	OR COD
13C4 PFBA	184012 185552	188724 167545	191598 156668	185732	Ave		179975.766			7.1	50.	0	
13C5 PFPeA	122795 124528	130582 109997	126664 100849	121600	Ave		119573.457			8.7	50.	0	
13C2 PFHxA	114823 110433	116762 102742	116882 96851	114330	Ave		110403.354			7.0	50.	0	
13C4-PFHpA	95409 103374	102587 94116	101750 82732	101240	Ave		97315.4086			7.6	50.	0	
1802 PFHxS	159078 167295	166967 156734	162565 148473	161303	Ave		160345.113			4.1	50.	0	
M2-6:2FTS	51318 53113	53061 51429	54985 52915	51250	Ave		52581.6090			2.6	50.	0	
13C4 PFOA	93593 89561	94544 76147	96123 71904	92711	Ave		87797.4314			11.0	50.	0	
13C4 PFOS	118735 120329	123509 112784	117549 112924	120440	Ave		118038.613			3.4	50.	0	
13C5 PFNA	72184 70397	73797 65028	73618 58471	71479	Ave		69282.2000			8.1	50.	0	
13C8 FOSA	207809 196759	198672 183580	210281 171947	205012	Ave		196294.226			7.1	50.	0	
M2-8:2FTS	40505 38389	41503 36290	41937 35315	40810	Ave		39249.7614			6.7	50.	0	
13C2 PFDA	64076 62969	65299 54232	66024 49314	61667	Ave		60511.5114			10.4	50.	0	
d3-NMeFOSAA	21840 23007	21552 20583	23199 21005	22482	Ave		21952.5343			4.5	50.	0	
d5-NEtFOSAA	23638 22454	23747 21205	24829 21348	23716	Ave		22990.8743			5.9	50.	0	

Note: The M1 coefficient is the same as Ave CF for an Ave curve type.

FORM VI LCMS BY EXTERNAL STANDARD - INITIAL CALIBRATION DATA CURVE EVALUATION

Lab Name: TestAmerica Sacramento Job No.: 320-29732-1 Analy Batch No.: 175252

SDG No.:

Instrument ID: A8_N GC Column: GeminiC18 3 ID: 3(mm) Heated Purge: (Y/N) N

ANALYTE						CURVE COEFFICIENT				MIN CF	%RSD	# MA		# MIN R^2
	LVL 1 LVL 5	LVL 2 LVL 6	LVL 3 LVL 7	LVL 4	TYPE	В	M1	M2				%R	SD OR COD	OR COD
13C2 PFUnA	43482 44328	46382 38330	47040 34692	39683	Ave		41991.1343				10.8	50	.0	
d-N-MeFOSA-M	51083 51227	47844 49888	51933 51332	49699	Ave		50429.4543				2.8	50	.0	
13C2 PFDoA	49998 40202	41982 42031	46572 39982	44162	Ave		43561.2200				8.4	50	.0	
d-N-EtFOSA-M	51432 51144	48396 51163	52153 50933	51166	Ave		50912.4286				2.3	50	.0	
13C2-PFTeDA	88801 79851	84941 77303	86226 71548	80617	Ave		81326.5571				7.2	50	.0	
13C2-PFHxDA	47408 41414	41944 41386	44280 37378	43594	Ave		42486.3314				7.3	50	.0	

Note: The M1 coefficient is the same as Ave CF for an Ave curve type.

FORM VI LCMS BY ISOTOPIC DILUTION - INITIAL CALIBRATION DATA CURVE EVALUATION

Lab Name: TestAmerica Sacramento Job No.: 320-29732-1 Analy Batch No.: 175252

SDG No.:

Instrument ID: A8_N GC Column: GeminiC18 3 ID: 3(mm) Heated Purge: (Y/N) N

ANALYTE			RRF			CURVE		COEFFICIE	NT :	MIN RRF	%RSD	 MAX	R^2		MIN R^2
	LVL 1	LVL 2	LVL 3	LVL 4	LVL 5	TYPE	В	M1	M2			∂RSD	OR COD		OR COD
	LVL 6	LVL 7													
Perfluorobutanoic acid (PFBA)	1.0150		0.9659	0.9226	0.8977	AveID		0.9107			10.1	35.0			
	0.8556														
Perfluoropentanoic acid (PFPeA)	1.0871		1.0552	1.0646	0.9902	AveID		0.9975			7.6	35.0			
	0.9743														
Perfluorobutanesulfonic acid (PFBS)	1.6953		1.6070	1.5054	1.3629	AveID		1.4217			14.3	50.0			
4.0.7770	1.2825	1.0944	0 0000	1 0500	0 0700			0.0700			0.6	25 0			
4:2 FTS	1.1137		0.9398	1.0533	0.9729	AvelD		0.9700			9.6	35.0			
Perfluorohexanoic acid (PFHxA)	1.0814		0.9100	0.9357	0.9369	7 TO TD		0.9374			7.1	35.0		_	
reilluoionexanoic acid (PrhxA)	0.9008		0.9100	0.933/	0.9369	Avein		0.93/4			/.1	33.0			
Perfluoroheptanoic acid (PFHpA)	1.0945		0.9982	1.0358	0.9774	AveTD		1.0092			4.6	35.0			
, ,	0.9939														
Perfluorohexanesulfonic acid (PFHxS)	+++++	1.1086	1.0586	1.0369	0.9681	AveID		1.0232			5.5	35.0			
	1.0013	0.9657													
6:2FTS	0.9957		0.8665	0.9000	0.8382	AveID		0.8582			8.9	35.0			
	0.8067														
Perfluorooctanoic acid (PFOA)	1.1331		1.0415	1.0347	1.0191	AveID		1.0463			4.3	35.0			
	1.0736														
Perfluoroheptanesulfonic Acid (PFHpS)	1.2356		1.2622	1.2396	1.1926	AveID		1.1737			7.6	50.0			
	1.1769		1 0000	4 0404	0.0500	<u> </u>		1 0011				0.5.0			
Perfluorooctanesulfonic acid (PFOS)	1.0995		1.0806	1.0121	0.9593	AveID		1.0341			4.7	35.0			
D. Cl	1.0598	1.0209	1.0417	1.0132	0.9799	7 . TD		1 0000			1	35.0			
Perfluorononanoic acid (PFNA)	1.0772	0.9533	1.041/	1.0132	0.9799	Avein		1.0000			4.6	35.0			
Perfluorooctane Sulfonamide (FOSA)	1.0534		0.9460	0.9215	0.9319	7 TO TD		0.9235			8.3	35.0		_	
Ferriuorooctane Surronamide (FOSA)	0.8759	0.8006	0.9460	0.9213	0.9319	Avein		0.9233			0.3	33.0			
8:2FTS	1.0777	0.8000	0.9582	0.8885	0.8781	ΔτεΤΠ		0.9182			9.0	35.0			
0.2110	0.8385	0.8492	0.3302	0.0005	0.0701	110010		0.5102]	55.0			
Perfluorodecanoic acid (PFDA)	0.9949		0.9469	0.9647	0.8831	AveTD		0.9359			4.1	35.0			
	0.9184														
N-methyl perfluorooctane	0.9585	0.8112	0.8886	0.9039	0.8937	AveID		0.9079			5.7	35.0			
sulfonamidoacetic acid (NMeFOSAA)	0.9529														
Perfluorodecanesulfonic acid (PFDS)	0.7154		0.7026	0.6196	0.6069	AveID		0.6369			8.0	50.0			
	0.6191	0.5849													
N-ethyl perfluorooctane	0.9234		0.8278	0.8198	0.8265	AveID		0.8499			4.1	35.0			
sulfonamidoacetic acid (NEtFOSAA)	0.8571	0.8434													
Perfluoroundecanoic acid (PFUnA)	1.4279		1.0939	1.0993	0.9522	L2ID	0.1852	1.0054					0.9940		0.9900
	0.9777	1.0219													

Note: The M1 coefficient is the same as Ave RRF for an Ave curve type.

FORM VI LCMS BY ISOTOPIC DILUTION - INITIAL CALIBRATION DATA CURVE EVALUATION

Lab Name: TestAmerica Sacramento Job No.: 320-29732-1 Analy Batch No.: 175252

SDG No.:

Instrument ID: A8_N GC Column: GeminiC18 3 ID: 3(mm) Heated Purge: (Y/N) N

ANALYTE		RRF				CURVE					MIN RRF	%RSD	# MAX		# MIN R^2
	LVL 1	LVL 2	LVL 3	LVL 4	LVL 5	TYPE	В	M1	М2				%RS	D OR COD	OR COD
	LVL 6	LVL 7													
MeFOSA	0.9241	0.8075	0.9412	0.9037	0.8958	AveID		0.8961				4.7	35	.0	
	0.9052	0.8952													
Perfluorododecanoic acid (PFDoA)	0.9526	0.9700	0.9547	0.9186	0.9920	AveID		0.9442				3.5	35	.0	
	0.9241	0.8975													
N-EtFOSA-M	0.9404	0.9229	0.9545	0.9058	0.9131	AveID		0.9273				1.8	35	.0	
	0.9341	0.9204													
Perfluorotridecanoic Acid (PFTriA)	0.8626	0.8641	0.8594	0.8657	0.8882	AveID		0.8512				3.5	50	.0	
	0.8079	0.8105													
Perfluorotetradecanoic acid (PFTeA)	2.3446	2.1101	2.1737	1.7703	1.9416	AveID		1.9468				14.1	50	.0	
	1.6352	1.6519													
Perfluoro-n-hexadecanoic acid (PFHxDA)	+++++	1.4914	0.9572	0.9244	0.8465	L2ID	0.6384	0.8505						0.9990	0.9900
	0.8388	0.8647													
Perfluoro-n-octadecanoic acid (PFODA)	0.9507	0.8622	0.8506	0.8241	0.9180	AveID		0.8788				4.9	50	.0	
	0.8809	0.8650													

Note: The M1 coefficient is the same as Ave RRF for an Ave curve type.

LCMS BY EXTERNAL STANDARD - INITIAL CALIBRATION DATA RESPONSE AND CONCENTRATION

Lab Name: TestAmerica Sacramento Job No.: 320-29732-1 Analy Batch No.: 175252

SDG No.:

Instrument ID: A8_N GC Column: GeminiC18 3 ID: 3 (mm) Heated Purge: (Y/N) N

Calibration Start Date: 07/20/2017 17:15 Calibration End Date: 07/20/2017 18:04 Calibration ID: 32643

Calibration Files:

LEVEL:	LAB SAMPLE ID:	LAB FILE ID:
Level 1	IC 320-175252/3	2017.07.20ICAL 003.d
Level 2	IC 320-175252/4	2017.07.20ICAL 004.d
Level 3	IC 320-175252/5	2017.07.20ICAL 005.d
Level 4	IC 320-175252/6	2017.07.20ICAL 006.d
Level 5	IC 320-175252/7	2017.07.20ICAL 007.d
Level 6	IC 320-175252/8	2017.07.20ICAL 008.d
Level 7	IC 320-175252/9	2017.07.20ICAL 009.d

ANALYTE	CURVE			RESPONSE				CONCENTRATION (NG/ML)						
	TYPE	LVL 1 LVL 6	LVL 2 LVL 7	LVL 3	LVL 4	LVL 5	LVL 1 LVL 6	LVL 2 LVL 7	LVL 3	LVL 4	LVL 5			
13C4 PFBA	Ave	9200596 8377231	9436219 7833395	9579895	9286597	9277585	50.0 50.0	50.0 50.0	50.0	50.0	50.0			
13C5 PFPeA	Ave	6139729 5499850	6529085 5042456	6333208	6079990	6226392	50.0 50.0	50.0 50.0	50.0	50.0	50.0			
13C2 PFHxA	Ave	5741173 5137101	5838100 4842529	5844106	5716524	5521641	50.0 50.0	50.0 50.0	50.0	50.0	50.0			
13C4-PFHpA	Ave	4770470 4705801	5129374 4136580	5087476	5061975	5168717	50.0 50.0	50.0 50.0	50.0	50.0	50.0			
1802 PFHxS	Ave	7524410 7413535	7897552 7022783	7689311	7629615	7913061	47.3 47.3	47.3 47.3	47.3	47.3	47.3			
M2-6:2FTS	Ave	2437617 2442868	2520393 2513479	2611787	2434393	2522848	47.5 47.5	47.5 47.5	47.5	47.5	47.5			
13C4 PFOA	Ave	4679652 3807339	4727178 3595203	4806165	4635535	4478029	50.0 50.0	50.0 50.0	50.0	50.0	50.0			
13C4 PFOS	Ave	5675527 5391084	5903714 5397776	5618820	5757051	5751748	47.8 47.8	47.8 47.8	47.8	47.8	47.8			
13C5 PFNA	Ave	3609220 3251409	3689841 2923565	3680912	3573960	3519863	50.0 50.0	50.0 50.0	50.0	50.0	50.0			
13C8 FOSA	Ave	10390454 9178999	9933579 8597334	10514072	10250601	9837940	50.0 50.0	50.0 50.0	50.0	50.0	50.0			
M2-8:2FTS	Ave	1940171 1738290	1988005 1691570	2008772	1954799	1838838	47.9 47.9	47.9 47.9	47.9	47.9	47.9			
13C2 PFDA	Ave	3203793 2711585	3264948 2465695	3301213	3083355	3148440	50.0 50.0	50.0 50.0	50.0	50.0	50.0			
d3-NMeFOSAA	Ave	1091995 1029158	1077600 1050235	1159944	1124094	1150361	50.0 50.0	50.0 50.0	50.0	50.0	50.0			
d5-NEtFOSAA	Ave	1181920 1060235	1187339 1067375	1241427	1185817	1122693	50.0 50.0	50.0 50.0	50.0	50.0	50.0			
13C2 PFUnA	Ave	2174103 1916521	2319108 1734594	2352011	1984157	2216403	50.0 50.0	50.0 50.0	50.0	50.0	50.0			

LCMS BY EXTERNAL STANDARD - INITIAL CALIBRATION DATA RESPONSE AND CONCENTRATION

Lab Name: TestAmerica Sacramento

SDG No.:

Instrument ID: A8_N

GC Column: GeminiC18 3 ID: 3 (mm)

Calibration Start Date: 07/20/2017 17:15

Calibration End Date: 07/20/2017 18:04

Calibration ID: 32643

ANALYTE	CURVE			RESPONSE				IG/ML)			
	TYPE	LVL 1 LVL 6	LVL 2 LVL 7	LVL 3	LVL 4	LVL 5	LVL 1 LVL 6	LVL 2 LVL 7	LVL 3	LVL 4	LVL 5
d-N-MeFOSA-M	Ave	2554150 2494419	2392214 2566577	2596651	2484961	2561337	50.0 50.0	50.0 50.0	50.0	50.0	50.0
13C2 PFDoA	Ave	2499919 2101530	2099102	2328581	2208104	2010091	50.0 50.0	50.0	50.0	50.0	50.0
d-N-EtFOSA-M	Ave	2571603 2558136	2419802 2546633	2607670	2558301	2557205	50.0 50.0	50.0 50.0	50.0	50.0	50.0
13C2-PFTeDA	Ave	4440061 3865134	4247031 3577415	4311299	4030828	3992527	50.0 50.0	50.0	50.0	50.0	50.0
13C2-PFHxDA	Ave	2370411 2069286	2097197 1868909	2213998	2179702	2070713	50.0 50.0	50.0 50.0	50.0	50.0	50.0

Curve Type Legend:

Ave = Average

LCMS BY ISOTOPIC DILUTION - INITIAL CALIBRATION DATA RESPONSE AND CONCENTRATION

Lab Name: TestAmerica Sacramento Job No.: 320-29732-1 Analy Batch No.: 175252

SDG No.:

Instrument ID: A8_N GC Column: GeminiC18 3 ID: 3 (mm) Heated Purge: (Y/N) N

Calibration Start Date: 07/20/2017 17:15 Calibration End Date: 07/20/2017 18:04 Calibration ID: 32643

Calibration Files:

LEVEL:	LAB SAMPLE ID:	LAB FILE ID:
Level 1	IC 320-175252/3	2017.07.20ICAL 003.d
Level 2	IC 320-175252/4	2017.07.20ICAL 004.d
Level 3	IC 320-175252/5	2017.07.20ICAL 005.d
Level 4	IC 320-175252/6	2017.07.20ICAL 006.d
Level 5	IC 320-175252/7	2017.07.20ICAL 007.d
Level 6	IC 320-175252/8	2017.07.20ICAL 008.d
Level 7	IC 320-175252/9	2017.07.20ICAL 009.d

ANALYTE		RVE	RESPONSE					CONCENTRATION (NG/ML)				
	REF T	PE LVL		LVL 2 LVL 7	LVL 3	LVL 4	LVL 5	LVL 1 LVL 6	LVL 2 LVL 7	LVL 3	LVL 4	LVL 5
Perfluorobutanoic acid (PFBA)	Av	91 91 1433	3383 5268	184401 23214875	925332	3426995	8328503	0.500 100	1.00 200	5.00	20.0	50.0
Perfluoropentanoic acid (PFPeA)	Av	EID 6	6748 6890	121725 17723967	668298	2589050	6165403	0.500 100	1.00 200	5.00	20.0	50.0
Perfluorobutanesulfonic acid (PFBS)	Av	2ID 11	9198 9760	207251 28727203	1154707	4293133	10077823	0.442 88.4	0.884 177	4.42	17.7	44.2
4:2 FTS	Av		6691 1810	48470 8272054	241314	1008354	2413036	0.467 93.4	0.934 187	4.67	18.7	46.7
Perfluorohexanoic acid (PFHxA)	Av		2085 4644	107198 17019818	531793	2139637	5173116	0.500 100	1.00 200	5.00	20.0	50.0
Perfluoroheptanoic acid (PFHpA)	Av		2213 4552	103969 15737233	507848	2097220	5052067	0.500 100	1.00 200	5.00	20.0	50.0
Perfluorohexanesulfonic acid (PFHxS)	Av	1428	++++ 1648	168436 26096061	783004	3044035	7368752	+++++ 91.0	0.910 182	4.55	18.2	45.5
6:2FTS	Av		4221 2933	42671 7544242	225835	874570	2110170	0.474 94.8	0.948 190	4.74	19.0	47.4
Perfluorooctanoic acid (PFOA)	Av		3024 5273	96571 14387974	500571	1918515	4563458	0.500 100	1.00 200	5.00	20.0	50.0
Perfluoroheptanesulfonic Acid (PFHpS)	Av	2ID 6	9832 6679	128302 21882659	706250	2842525	6830714	0.476 95.2	0.952 190	4.76	19.0	47.6
Perfluorooctanesulfonic acid (PFOS)	Av	eID 6	0576 2240	115323 21396229	589410	2262384	5355867	0.464 92.8	0.928 186	4.64	18.6	46.4
Perfluorononanoic acid (PFNA)	Av		8878 1679	70352 11221107	383423	1448390	3449039	0.500 100	1.00 200	5.00	20.0	50.0
Perfluorooctane Sulfonamide (FOSA)	Av	2ID 10 1607	9454 9802	185849 27533112	994657	3778234	9167796	0.500 100	1.00 200	5.00	20.0	50.0
8:2FTS	Av		0909 5139	37263 5746246	192486	694740	1614685	0.479 95.8	0.958 192	4.79	19.2	47.9
Perfluorodecanoic acid (PFDA)	Av		1875 0519	58871 9286312	312593	1189794	2780389	0.500 100	1.00 200	5.00	20.0	50.0

FORM VI LCMS BY ISOTOPIC DILUTION - INITIAL CALIBRATION DATA RESPONSE AND CONCENTRATION

Lab Name: TestAmerica Sacramento Job No.: 320-29732-1 Analy Batch No.: 175252

SDG No.:

Instrument ID: A8_N GC Column: GeminiC18 3 ID: 3(mm) Heated Purge: (Y/N) N

ANALYTE	IS	CURVE			RESPONSE				CONCEN	NTRATION (N	IG/ML)	
	REF	TYPE	LVL 1 LVL 6	LVL 2 LVL 7	LVL 3	LVL 4	LVL 5	LVL 1 LVL 6	LVL 2 LVL 7	LVL 3	LVL 4	LVL 5
N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA)		AveID	10467 1961461	17484 3976390	103070	406426	1028023	0.500	1.00	5.00	20.0	50.0
Perfluorodecanesulfonic acid (PFDS)		AveID	40940	72566 12733574	398109	1438851	3520028	0.482 96.4	0.964	4.82	19.3	48.2
N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)		AveID	10914 1817407	20217 3601071	102763	388851	927893	0.500 100	1.00 200	5.00	20.0	50.0
Perfluoroundecanoic acid (PFUnA)		L2ID	31045 3747668	49779 7090167	257295	872446	2110542	0.500 100	1.00 200	5.00	20.0	50.0
MeFOSA		AveID	23604 4515811	38635 9190215	244390	898240	2294511	0.500 100	1.00 200	5.00	20.0	50.0
Perfluorododecanoic acid (PFDoA)		AveID	23814 3884028	40721 7176939	222314	811349	1994038	0.500 100	1.00 200	5.00	20.0	50.0
N-EtFOSA-M		AveID	24183 4779335	44664 9376063	248915	926942	2334866	0.500 100	1.00 200	5.00	20.0	50.0
Perfluorotridecanoic Acid (PFTriA)		AveID	21565 3395607	36276 6481083	200109	764621	1785380	0.500 100	1.00 200	5.00	20.0	50.0
Perfluorotetradecanoic acid (PFTeA)		AveID	58614 6873007	88585 13208906	506153	1563632	3902732	0.500 100	1.00 200	5.00	20.0	50.0
Perfluoro-n-hexadecanoic acid (PFHxDA)		L2ID	+++++ 3525628	62612 6914779	222901	816435	1701571	+++++ 100	1.00 200	5.00	20.0	50.0
Perfluoro-n-octadecanoic acid (PFODA)		AveID	23766 3702487	36195 6917166	198059	727856	1845337	0.500 100	1.00 200	5.00	20.0	50.0

Curve Type Legend:

AveID = Average isotope dilution

L2ID = Linear 1/conc^2 IsoDil

Lab Name: TestAmerica Sacramento Job No.: 320-29732-1

SDG No.:

Lab Sample ID: <u>ICV 320-175252/12</u> Calibration Date: <u>07/20/2017 18:18</u>

Instrument ID: A8_N Calib Start Date: 07/20/2017 17:15

GC Column: GeminiC18 3×100 ID: 3.00 (mm) Calib End Date: 07/20/2017 18:04

Lab File ID: 2017.07.20ICAL_012.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanoic acid (PFBA)	AveID	0.9107	0.9350		50.8	49.5	2.7	25.0
Perfluoropentanoic acid (PFPeA)	AveID	0.997	1.081		53.7	49.5	8.4	25.0
Perfluorobutanesulfonic acid (PFBS)	AveID	1.422	1.601		49.3	43.8	12.6	25.0
Perfluorohexanoic acid (PFHxA)	AveID	0.9374	1.040		54.9	49.5	11.0	25.0
Perfluoroheptanoic acid (PFHpA)	AveID	1.009	1.099		53.9	49.5	8.9	25.0
Perfluorohexanesulfonic acid (PFHxS)	AveID	1.023	1.070		48.9	46.8	4.6	25.0
6:2FTS	AveID	0.8582	0.9405		51.4	46.9	9.6	25.0
Perfluorooctanoic acid (PFOA)	AveID	1.046	1.133		53.6	49.5	8.3	25.0
Perfluoroheptanesulfonic Acid (PFHpS)	AveID	1.174	1.228		49.3	47.1	4.7	25.0
Perfluorononanoic acid (PFNA)	AveID	1.000	1.056		52.3	49.5	5.6	25.0
Perfluorooctanesulfonic acid (PFOS)	AveID	1.034	0.9896		45.2	47.3	-4.3	25.0
8:2FTS	AveID	0.9182	0.9403		48.6	47.4	2.4	25.0
Perfluorooctane Sulfonamide (FOSA)	AveID	0.9235	0.9705		52.0	49.5	5.1	25.0
Perfluorodecanoic acid (PFDA)	AveID	0.9359	0.9767		51.7	49.5	4.4	25.0
N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA)	AveID	0.9079	0.9670		52.7	49.5	6.5	25.0
Perfluorodecanesulfonic acid (PFDS)	AveID	0.6369	0.6599		49.5	47.8	3.6	25.0
N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)	AveID	0.8499	0.8856		51.6	49.5	4.2	25.0
Perfluoroundecanoic acid (PFUnA)	L2ID		1.039		51.0	49.5	3.0	25.0
MeFOSA	AveID	0.8961	0.9655		53.3	49.5	7.7	25.0
Perfluorododecanoic acid (PFDoA)	AveID	0.9442	1.017		53.3	49.5	7.8	25.0
N-EtFOSA-M	AveID	0.9273	1.032		55.1	49.5	11.3	25.0
Perfluorotridecanoic Acid (PFTriA)	AveID	0.8512	0.9449		55.0	49.5	11.0	25.0
Perfluorotetradecanoic acid (PFTeA)	AveID	1.947	2.005		51.0	49.5	3.0	25.0
Perfluoro-n-hexadecanoic acid (PFHxDA)	L2ID		0.9234		53.0	49.5	7.1	25.0
Perfluoro-n-octadecanoic acid (PFODA)	AveID	0.8788	0.9130		51.4	49.5	3.9	25.0
13C4 PFBA	Ave	179976	178028		49.0	49.5	-1.1	50.0
13C5 PFPeA	Ave	119573	116570		48.3	49.5	-2.5	50.0
13C2 PFHxA	Ave	110403	106759		47.9	49.5	-3.3	50.0
13C4-PFHpA	Ave	97315	95437		48.5	49.5	-1.9	50.0
1802 PFHxS	Ave	160345	155563		45.4	46.8	-3.0	50.0
M2-6:2FTS	Ave	52582	50555		45.2	47.0	-3.9	50.0

Lab Name: TestAmerica Sacramento Job No.: 320-29732-1

SDG No.:

Lab Sample ID: <u>ICV 320-175252/12</u> Calibration Date: <u>07/20/2017 18:18</u>

Instrument ID: A8_N Calib Start Date: 07/20/2017 17:15

GC Column: GeminiC18 3×100 ID: 3.00 (mm) Calib End Date: 07/20/2017 18:04

Lab File ID: 2017.07.20ICAL_012.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE CF	CF	MIN CF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
13C4 PFOA	Ave	87797	83504		47.1	49.5	-4.9	50.0
13C4 PFOS	Ave	118039	113145		45.4	47.3	-4.1	50.0
13C5 PFNA	Ave	69282	65202		46.6	49.5	-5.9	50.0
13C8 FOSA	Ave	196294	177132		44.7	49.5	-9.8	50.0
M2-8:2FTS	Ave	39250	37570		45.4	47.4	-4.3	50.0
13C2 PFDA	Ave	60512	57778		47.3	49.5	-4.5	50.0
d3-NMeFOSAA	Ave	21953	21994		49.6	49.5	0.2	50.0
13C2 PFUnA	Ave	41991	38026		44.8	49.5	-9.4	50.0
d5-NEtFOSAA	Ave	22991	21543		46.4	49.5	-6.3	50.0
d-N-MeFOSA-M	Ave	50429	49400		48.5	49.5	-2.0	50.0
13C2 PFDoA	Ave	43561	39439		44.8	49.5	-9.5	50.0
d-N-EtFOSA-M	Ave	50912	49235		47.9	49.5	-3.3	50.0
13C2-PFTeDA	Ave	81327	74098		45.1	49.5	-8.9	50.0
13C2-PFHxDA	Ave	42486	39580		46.1	49.5	-6.8	50.0

LCMS ANALYSIS RUN LOG

Lab Name: TestAmerica Sacramento	Job No.: <u>320-29732-1</u>
SDG No.:	
Instrument ID: A8_N	Start Date: 07/21/2017 11:54
Analysis Batch Number: 175391	End Date: 07/21/2017 12:28

LAB SAMPLE ID	CLIENT SAMPLE ID	DATE ANALYZED	DILUTION	LAB FILE ID	COLUMN ID
			FACTOR		
CCVL 320-175391/2		07/21/2017 11:54	1	2017.07.21A_005	GeminiC18 3x100 3(mm)
CCV 320-175391/3		07/21/2017 12:00	1		GeminiC18 3x100 3(mm)
ZZZZZ		07/21/2017 12:07	1		GeminiC18 3x100 3(mm)
ZZZZZ		07/21/2017 12:14	1		GeminiC18 3x100 3(mm)
ZZZZZ		07/21/2017 12:21	1		GeminiC18 3x100 3(mm)
CCV 320-175391/7		07/21/2017 12:28	1		GeminiC18 3x100 3(mm)

Lab Name: TestAmerica Sacramento Job No.: 320-29732-1

SDG No.:

Lab Sample ID: CCVL 320-175391/2 Calibration Date: 07/21/2017 11:54

Instrument ID: A8_N Calib Start Date: 07/20/2017 17:15

GC Column: GeminiC18 3×100 ID: 3.00 (mm) Calib End Date: 07/20/2017 18:04

Lab File ID: 2017.07.21A_005.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanoic acid (PFBA)	AveID	0.9107	0.8995		0.988	1.00	-1.2	50.0
Perfluoropentanoic acid (PFPeA)	AveID	0.997	1.133		1.14	1.00	13.6	50.0
Perfluorobutanesulfonic acid (PFBS)	AveID	1.422	1.364		0.848	0.884	-4.0	50.0
Perfluorohexanoic acid (PFHxA)	AveID	0.9374	1.007		1.07	1.00	7.4	50.0
Perfluoroheptanoic acid (PFHpA)	AveID	1.009	1.046		1.04	1.00	3.7	50.0
Perfluorohexanesulfonic acid (PFHxS)	AveID	1.023	1.141		1.01	0.910	11.5	50.0
6:2FTS	AveID	0.8582	0.9025		0.997	0.948	5.2	50.0
Perfluorooctanoic acid (PFOA)	AveID	1.046	1.063		1.02	1.00	1.6	50.0
Perfluoroheptanesulfonic Acid (PFHpS)	AveID	1.174	1.187		0.962	0.952	1.1	50.0
Perfluorononanoic acid (PFNA)	AveID	1.000	0.9449		0.945	1.00	-5.5	50.0
Perfluorooctanesulfonic acid (PFOS)	AveID	1.034	1.053		0.945	0.928	1.8	50.0
8:2FTS	AveID	0.9182	1.018		1.06	0.958	10.8	50.0
Perfluorodecanoic acid (PFDA)	AveID	0.9359	0.9908		1.06	1.00	5.9	50.0
Perfluorooctane Sulfonamide (FOSA)	AveID	0.9235	0.9134		0.989	1.00	-1.1	50.0
N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA)	AveID	0.9079	0.8950		0.986	1.00	-1.4	50.0
Perfluorodecanesulfonic acid (PFDS)	AveID	0.6369	0.6395		0.968	0.964	0.4	50.0
N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)	AveID	0.8499	0.7960		0.937	1.00	-6.3	50.0
Perfluoroundecanoic acid (PFUnA)	L2ID		1.062		0.872	1.00	-12.8	50.0
MeFOSA	AveID	0.8961	0.8927		0.996	1.00	-0.4	50.0
Perfluorododecanoic acid (PFDoA)	AveID	0.9442	1.001		1.06	1.00	6.0	50.0
N-EtFOSA-M	AveID	0.9273	0.8998		0.970	1.00	-3.0	50.0
Perfluorotridecanoic Acid (PFTriA)	AveID	0.8512	0.8216		0.965	1.00	-3.5	50.0
Perfluorotetradecanoic acid (PFTeA)	AveID	1.947	2.245		1.15	1.00	15.3	50.0
Perfluoro-n-hexadecanoic acid (PFHxDA)	L2ID		1.269		0.741	1.00	-25.9	50.0
Perfluoro-n-octadecanoic acid (PFODA)	AveID	0.8788	0.6894		0.784	1.00	-21.6	50.0
13C4 PFBA	Ave	179976	182006		50.6	50.0	1.1	50.0
13C5 PFPeA	Ave	119573	130340		54.5	50.0	9.0	50.0
13C2 PFHxA	Ave	110403	120169		54.4	50.0	8.8	50.0
13C4-PFHpA	Ave	97315	116627		59.9	50.0	19.8	50.0
1802 PFHxS	Ave	160345	175831		51.9	47.3	9.7	50.0
M2-6:2FTS	Ave	52582	56274		50.8	47.5	7.0	50.0

Lab Name: TestAmerica Sacramento Job No.: 320-29732-1

SDG No.:

Lab Sample ID: <u>CCVL 320-175391/2</u> Calibration Date: <u>07/21/2017 11:54</u>

Instrument ID: A8_N Calib Start Date: 07/20/2017 17:15

GC Column: GeminiC18 3×100 ID: 3.00 (mm) Calib End Date: 07/20/2017 18:04

Lab File ID: 2017.07.21A_005.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE CF	CF	MIN CF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
13C4 PFOA	Ave	87797	106007		60.4	50.0	20.7	50.0
13C4 PFOS	Ave	118039	121001		49.0	47.8	2.5	50.0
13C5 PFNA	Ave	69282	84924		61.3	50.0	22.6	50.0
M2-8:2FTS	Ave	39250	43515		53.1	47.9	10.9	50.0
13C2 PFDA	Ave	60512	71626		59.2	50.0	18.4	50.0
13C8 FOSA	Ave	196294	206709		52.7	50.0	5.3	50.0
d3-NMeFOSAA	Ave	21953	26451		60.2	50.0	20.5	50.0
13C2 PFUnA	Ave	41991	54054		64.4	50.0	28.7	50.0
d5-NEtFOSAA	Ave	22991	27935		60.8	50.0	21.5	50.0
d-N-MeFOSA-M	Ave	50429	49501		49.1	50.0	-1.8	50.0
13C2 PFDoA	Ave	43561	50612		58.1	50.0	16.2	50.0
d-N-EtFOSA-M	Ave	50912	48873		48.0	50.0	-4.0	50.0
13C2-PFTeDA	Ave	81327	95625		58.8	50.0	17.6	50.0
13C2-PFHxDA	Ave	42486	43502		51.2	50.0	2.4	50.0

LCMS ANALYSIS RUN LOG

Lab Name: TestAmerica Sacramento	Job No.: 320-29732-1
SDG No.:	
Instrument ID: A8_N	Start Date: 07/21/2017 20:38
Analysis Batch Number: 175462	End Date: 07/21/2017 23:44

LAB SAMPLE ID	CLIENT SAMPLE ID	DATE ANALYZED	DILUTION FACTOR	LAB FILE ID	COLUMN ID
CCV 320-175462/1		07/21/2017 20:38	1	2017.07.21C_015 .d	GeminiC18 3x100 3(mm)
MB 320-174599/1-A		07/21/2017 20:45	1	2017.07.21C_016	GeminiC18 3x100 3(mm)
LCS 320-174599/2-A		07/21/2017 20:52	1	2017.07.21C_017	GeminiC18 3x100 3(mm)
LCSD 320-174599/3-A		07/21/2017 20:59	1	.d 2017.07.21C_018	GeminiC18 3x100 3(mm)
320-29732-4		07/21/2017 21:06	1	.d 2017.07.21C_019 .d	GeminiC18 3x100 3(mm)
CCV 320-175462/9		07/21/2017 21:33	1	2017.07.21C_023	GeminiC18 3x100 3(mm)
ZZZZZ		07/21/2017 21:47	1		GeminiC18 3x100 3(mm)
ZZZZZ		07/21/2017 21:54	1		GeminiC18 3x100 3(mm)
ZZZZZ		07/21/2017 22:01	1		GeminiC18 3x100 3(mm)
ZZZZZ		07/21/2017 22:08	1		GeminiC18 3x100 3 (mm)
ZZZZZ		07/21/2017 22:15	1		GeminiC18 3x100 3 (mm)
ZZZZZ		07/21/2017 22:42	1		GeminiC18 3x100 3(mm)
CCV 320-175462/20		07/21/2017 22:49	1		GeminiC18 3x100 3(mm)
ZZZZZ		07/21/2017 22:56	1		GeminiC18 3x100 3(mm)
CCV 320-175462/22		07/21/2017 23:03	1		GeminiC18 3x100 3(mm)
ZZZZZ		07/21/2017 23:10	1		GeminiC18 3x100 3(mm)
ZZZZZ		07/21/2017 23:17	1		GeminiC18 3x100 3(mm)
ZZZZZ		07/21/2017 23:24	1		GeminiC18 3x100 3 (mm)
ZZZZZ		07/21/2017 23:31	1		GeminiC18 3x100 3 (mm)
ZZZZZ		07/21/2017 23:37	1		GeminiC18 3x100 3 (mm)
CCV 320-175462/28		07/21/2017 23:44	1		GeminiC18 3x100 3 (mm)

Lab Name: TestAmerica Sacramento Job No.: 320-29732-1

SDG No.:

Lab Sample ID: CCV 320-175462/1 Calibration Date: 07/21/2017 20:38

Instrument ID: A8_N Calib Start Date: 07/20/2017 17:15

GC Column: GeminiC18 3×100 ID: 3.00 (mm) Calib End Date: 07/20/2017 18:04

Lab File ID: 2017.07.21C_015.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanoic acid (PFBA)	AveID	0.9107	0.9526		20.9	20.0	4.6	25.0
Perfluoropentanoic acid (PFPeA)	AveID	0.997	1.054		21.1	20.0	5.7	25.0
Perfluorobutanesulfonic acid (PFBS)	AveID	1.422	1.300		16.2	17.7	-8.5	25.0
Perfluorohexanoic acid (PFHxA)	AveID	0.9374	0.9252		19.7	20.0	-1.3	25.0
Perfluoroheptanoic acid (PFHpA)	AveID	1.009	1.021		20.2	20.0	1.1	25.0
Perfluorohexanesulfonic acid (PFHxS)	AveID	1.023	0.9749		17.3	18.2	-4.7	25.0
6:2FTS	AveID	0.8582	0.9087		20.1	19.0	5.9	25.0
Perfluorooctanoic acid (PFOA)	AveID	1.046	1.091		20.8	20.0	4.2	25.0
Perfluoroheptanesulfonic Acid (PFHpS)	AveID	1.174	1.287		20.9	19.0	9.7	25.0
Perfluorononanoic acid (PFNA)	AveID	1.000	0.9938		19.9	20.0	-0.6	25.0
Perfluorooctanesulfonic acid (PFOS)	AveID	1.034	1.053		18.9	18.6	1.8	25.0
8:2FTS	AveID	0.9182	0.9223		19.2	19.2	0.4	25.0
Perfluorodecanoic acid (PFDA)	AveID	0.9359	1.023		21.9	20.0	9.3	25.0
Perfluorooctane Sulfonamide (FOSA)	AveID	0.9235	0.9545		20.7	20.0	3.4	25.0
N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA)	AveID	0.9079	0.9137		20.1	20.0	0.6	25.0
Perfluorodecanesulfonic acid (PFDS)	AveID	0.6369	0.6186		18.7	19.3	-2.9	25.0
N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)	AveID	0.8499	0.8808		20.7	20.0	3.6	25.0
Perfluoroundecanoic acid (PFUnA)	L2ID		1.027		20.2	20.0	1.2	25.0
MeFOSA	AveID	0.8961	0.9008		20.1	20.0	0.5	25.0
Perfluorododecanoic acid (PFDoA)	AveID	0.9442	0.9247		19.6	20.0	-2.1	25.0
N-EtFOSA-M	AveID	0.9273	0.9532		20.6	20.0	2.8	25.0
Perfluorotridecanoic Acid (PFTriA)	AveID	0.8512	0.8799		20.7	20.0	3.4	25.0
Perfluorotetradecanoic acid (PFTeA)	AveID	1.947	1.852		19.0	20.0	-4.8	25.0
Perfluoro-n-hexadecanoic acid (PFHxDA)	L2ID		0.8395		19.0	20.0	-5.0	25.0
Perfluoro-n-octadecanoic acid (PFODA)	AveID	0.8788	0.8346		19.0	20.0	-5.0	25.0
13C4 PFBA	Ave	179976	185474		51.5	50.0	3.1	50.0
13C5 PFPeA	Ave	119573	129031		54.0	50.0	7.9	50.0
13C2 PFHxA	Ave	110403	121342		55.0	50.0	9.9	50.0
13C4-PFHpA	Ave	97315	114235		58.7	50.0	17.4	50.0
1802 PFHxS	Ave	160345	172889		51.0	47.3	7.8	50.0
M2-6:2FTS	Ave	52582	55336		50.0	47.5	5.2	50.0

Lab Name: TestAmerica Sacramento Job No.: 320-29732-1

SDG No.:

Lab Sample ID: <u>CCV 320-175462/1</u> Calibration Date: <u>07/21/2017 20:38</u>

Instrument ID: A8_N Calib Start Date: 07/20/2017 17:15

GC Column: GeminiC18 3×100 ID: 3.00 (mm) Calib End Date: 07/20/2017 18:04

Lab File ID: 2017.07.21C_015.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE CF	CF	MIN CF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
13C4 PFOA	Ave	87797	96890		55.2	50.0	10.4	50.0
13C4 PFOS	Ave	118039	117088		47.4	47.8	-0.8	50.0
13C5 PFNA	Ave	69282	77579		56.0	50.0	12.0	50.0
M2-8:2FTS	Ave	39250	39760		48.5	47.9	1.3	50.0
13C2 PFDA	Ave	60512	59881		49.5	50.0	-1.0	50.0
13C8 FOSA	Ave	196294	197802		50.4	50.0	0.8	50.0
d3-NMeFOSAA	Ave	21953	22025		50.2	50.0	0.3	50.0
d5-NEtFOSAA	Ave	22991	23045		50.1	50.0	0.2	50.0
13C2 PFUnA	Ave	41991	46415		55.3	50.0	10.5	50.0
d-N-MeFOSA-M	Ave	50429	50148		49.7	50.0	-0.6	50.0
13C2 PFDoA	Ave	43561	45612		52.4	50.0	4.7	50.0
d-N-EtFOSA-M	Ave	50912	49676		48.8	50.0	-2.4	50.0
13C2-PFTeDA	Ave	81327	85439		52.5	50.0	5.1	50.0
13C2-PFHxDA	Ave	42486	41938		49.4	50.0	-1.3	50.0

Lab Name: TestAmerica Sacramento Job No.: 320-29732-1

SDG No.:

Lab Sample ID: CCV 320-175462/9 Calibration Date: 07/21/2017 21:33

Instrument ID: A8_N Calib Start Date: 07/20/2017 17:15

GC Column: GeminiC18 3×100 ID: 3.00 (mm) Calib End Date: 07/20/2017 18:04

Lab File ID: 2017.07.21C_023.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanoic acid (PFBA)	AveID	0.9107	0.9237		50.7	50.0	1.4	25.0
Perfluoropentanoic acid (PFPeA)	AveID	0.997	0.9816		49.2	50.0	-1.6	25.0
Perfluorobutanesulfonic acid (PFBS)	AveID	1.422	1.255		39.0	44.2	-11.7	25.0
Perfluorohexanoic acid (PFHxA)	AveID	0.9374	0.9560		51.0	50.0	2.0	25.0
Perfluoroheptanoic acid (PFHpA)	AveID	1.009	0.9936		49.2	50.0	-1.5	25.0
Perfluorohexanesulfonic acid (PFHxS)	AveID	1.023	0.9776		43.5	45.5	-4.5	25.0
6:2FTS	AveID	0.8582	0.8350		46.1	47.4	-2.7	25.0
Perfluorooctanoic acid (PFOA)	AveID	1.046	1.028		49.1	50.0	-1.8	25.0
Perfluoroheptanesulfonic Acid (PFHpS)	AveID	1.174	1.158		47.0	47.6	-1.3	25.0
Perfluorononanoic acid (PFNA)	AveID	1.000	0.996		49.8	50.0	-0.4	25.0
Perfluorooctanesulfonic acid (PFOS)	AveID	1.034	1.013		45.5	46.4	-2.0	25.0
8:2FTS	AveID	0.9182	0.8612		44.9	47.9	-6.2	25.0
Perfluorodecanoic acid (PFDA)	AveID	0.9359	0.9261		49.5	50.0	-1.0	25.0
Perfluorooctane Sulfonamide (FOSA)	AveID	0.9235	0.9079		49.2	50.0	-1.7	25.0
N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA)	AveID	0.9079	0.9213		50.7	50.0	1.5	25.0
Perfluorodecanesulfonic acid (PFDS)	AveID	0.6369	0.6071		46.0	48.2	-4.7	25.0
N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)	AveID	0.8499	0.8386		49.3	50.0	-1.3	25.0
Perfluoroundecanoic acid (PFUnA)	L2ID		0.998		49.4	50.0	-1.1	25.0
MeFOSA	AveID	0.8961	0.8790		49.0	50.0	-1.9	25.0
Perfluorododecanoic acid (PFDoA)	AveID	0.9442	0.9609		50.9	50.0	1.8	25.0
N-EtFOSA-M	AveID	0.9273	0.9414		50.8	50.0	1.5	25.0
Perfluorotridecanoic Acid (PFTriA)	AveID	0.8512	0.9210		54.1	50.0	8.2	25.0
Perfluorotetradecanoic acid (PFTeA)	AveID	1.947	1.833		47.1	50.0	-5.9	25.0
Perfluoro-n-hexadecanoic acid (PFHxDA)	L2ID		0.8151		47.2	50.0	-5.7	25.0
Perfluoro-n-octadecanoic acid (PFODA)	AveID	0.8788	0.8071		45.9	50.0	-8.2	25.0
13C4 PFBA	Ave	179976	179034		49.7	50.0	-0.5	50.0
13C5 PFPeA	Ave	119573	122233		51.1	50.0	2.2	50.0
13C2 PFHxA	Ave	110403	118354		53.6	50.0	7.2	50.0
13C4-PFHpA	Ave	97315	108911		56.0	50.0	11.9	50.0
1802 PFHxS	Ave	160345	174480		51.5	47.3	8.8	50.0
M2-6:2FTS	Ave	52582	53483		48.3	47.5	1.7	50.0

Lab Name: TestAmerica Sacramento Job No.: 320-29732-1

SDG No.:

Lab Sample ID: <u>CCV 320-175462/9</u> Calibration Date: <u>07/21/2017 21:33</u>

Instrument ID: <u>A8_N</u> Calib Start Date: 07/20/2017 17:15

GC Column: GeminiC18 3×100 ID: 3.00 (mm) Calib End Date: 07/20/2017 18:04

Lab File ID: 2017.07.21C_023.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE CF	CF	MIN CF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
13C4 PFOA	Ave	87797	93139		53.0	50.0	6.1	50.0
13C4 PFOS	Ave	118039	114874		46.5	47.8	-2.7	50.0
13C5 PFNA	Ave	69282	72949		52.6	50.0	5.3	50.0
M2-8:2FTS	Ave	39250	39415		48.1	47.9	0.4	50.0
13C2 PFDA	Ave	60512	64619		53.4	50.0	6.8	50.0
13C8 FOSA	Ave	196294	196685		50.1	50.0	0.2	50.0
d3-NMeFOSAA	Ave	21953	21431		48.8	50.0	-2.4	50.0
d5-NEtFOSAA	Ave	22991	22867		49.7	50.0	-0.5	50.0
13C2 PFUnA	Ave	41991	45484		54.2	50.0	8.3	50.0
d-N-MeFOSA-M	Ave	50429	51438		51.0	50.0	2.0	50.0
13C2 PFDoA	Ave	43561	42322		48.6	50.0	-2.8	50.0
d-N-EtFOSA-M	Ave	50912	48963		48.1	50.0	-3.8	50.0
13C2-PFTeDA	Ave	81327	81132		49.9	50.0	-0.2	50.0
13C2-PFHxDA	Ave	42486	40673		47.9	50.0	-4.3	50.0

LCMS ANALYSIS RUN LOG

Lab Name:	TestAmerica Sacramento	Job No.: 320-29732-1
SDG No.:		
Instrument	: ID: A8_N	Start Date: 07/23/2017 13:10

Analysis Batch Number: 175476 End Date: 07/23/2017 14:12

TAD CAMPIE ID	CLIENT CIMPLE ID	DAME ANALYGED	DILLIMION	TAD BILD ID	COLUMN TO
LAB SAMPLE ID	CLIENT SAMPLE ID	DATE ANALYZED	DILUTION	LAB FILE ID	COLUMN ID
			FACTOR		
IC 320-175476/3		07/23/2017 13:10	1	2017.07.23ICAL	GeminiC18 3x100 3(mm)
				003.d	, ,
IC 320-175476/4		07/23/2017 13:17	1	2017.07.23ICAL_	GeminiC18 3x100 3(mm)
				004.d	
IC 320-175476/5		07/23/2017 13:23	1	2017.07.23ICAL_	GeminiC18 3x100 3(mm)
				005.d	
IC 320-175476/6		07/23/2017 13:30	1	2017.07.23ICAL_	GeminiC18 3x100 3(mm)
				006.d	
IC 320-175476/7		07/23/2017 13:37	1	2017.07.23ICAL_	GeminiC18 3x100 3(mm)
TO 200 175 476 /0		07/02/0017 12 44	1	007.d	0 1 1010 0 100 0 ()
IC 320-175476/8		07/23/2017 13:44	1	2017.07.23ICAL_ 008.d	GeminiC18 3x100 3(mm)
IC 320-175476/9		07/23/2017 13:51	1	2017.07.23ICAL	Camini G10 3100 3 ()
10 320-1/34/6/9		07/23/2017 13:51	1	009.d	GeminiC18 3x100 3(mm)
IC 320-175476/10		07/23/2017 13:58	1	2017.07.23ICAL	GeminiC18 3x100 3(mm)
10 320 1/34/0/10		07/25/2017 15:50	_	010.d	GCMITTICIO SATOO S (Nun)
ICB 320-175476/11		07/23/2017 14:05	1	010.0	GeminiC18 3x100 3(mm)
		, , ,	1	2017 07 227077	, ,
ICV 320-175476/12		07/23/2017 14:12	1	2017.07.23ICAL_	GeminiC18 3x100 3(mm)
	1		1	012.d	

LCMS BY EXTERNAL STANDARD - INITIAL CALIBRATION DATA CURVE EVALUATION

Lab Name: TestAmerica Sacramento Job No.: 320-29732-1 Analy Batch No.: 175476

SDG No.:

Instrument ID: A8_N GC Column: GeminiC18 3 ID: 3 (mm) Heated Purge: (Y/N) N

Calibration Files:

LEVEL:	LAB SAMPLE ID:	LAB FILE ID:	
Level 1	IC 320-175476/3	2017.07.23ICAL 003.d	
Level 2	IC 320-175476/4	2017.07.23ICAL 004.d	
Level 3	IC 320-175476/5	2017.07.23ICAL 005.d	
Level 4	IC 320-175476/6	2017.07.23ICAL 006.d	
Level 5	IC 320-175476/7	2017.07.23ICAL 007.d	
Level 6	IC 320-175476/8	2017.07.23ICAL 008.d	
Level 7	IC 320-175476/9	2017.07.23ICAL 009.d	

ANALYTE		CE	?		CURVE		COEFFICIENT	#	MIN CF	%RSD		R^2	# MIN R^2
	LVL 1 LVL 5	LVL 2 LVL 6	LVL 3 LVL 7	LVL 4	TYPE	В	M1	M2			%RSD	OR COD	OR COD
13C4 PFBA	152053 157681	163980 154959	154495 144194	164812	Ave		156024.871			4.6	50.0		
13C5 PFPeA	112330 113367	113271 107128	114901 97483	114991	Ave		110495.974			5.7	50.0		
13C2 PFHxA	99251 101483	106825 95312	104111 95869	105244	Ave		101156.454			4.5	50.0		
13C4-PFHpA	82694 85260	86913 82470	90044 73260	86129	Ave		83824.1743			6.4	50.0		
1802 PFHxS	132676 140952	140772 136009	138889 130681	142083	Ave		137437.629			3.2	50.0		
M2-6:2FTS	44370 49800	49627 46134	46905 47140	48942	Ave		47559.6782			4.2	50.0		
13C4 PFOA	83673 88195	87871 73565	84657 66554	90489	Ave		82143.4457			10.7	50.0		
13C4 PFOS	109299 107020	110882 109073	108369 107040	105715	Ave		108199.540			1.6	50.0		
13C5 PFNA	69868 65902	70634 61867	69820 57186	64906	Ave		65740.4057			7.5	50.0		
13C8 FOSA	180231 189242	187050 179948	182777 175979	184386	Ave		182801.637			2.5	50.0		
M2-8:2FTS	36776 38858	35522 34801	36506 36177	36861	Ave		36500.1879			3.5	50.0		
13C2 PFDA	54727 56447	59217 51539	59463 52282	57178	Ave		55836.0714			5.6	50.0		
d3-NMeFOSAA	21012 22957	20987 21375	21804 22675	21311	Ave		21731.6800			3.6	50.0		
d5-NEtFOSAA	21868 21108	22646 21365	22738 21137	22655	Ave		21930.9771			3.4	50.0		

Note: The M1 coefficient is the same as Ave CF for an Ave curve type.

FORM VI LCMS BY EXTERNAL STANDARD - INITIAL CALIBRATION DATA CURVE EVALUATION

Lab Name: TestAmerica Sacramento Job No.: 320-29732-1 Analy Batch No.: 175476

SDG No.:

Instrument ID: A8_N GC Column: GeminiC18 3 ID: 3(mm) Heated Purge: (Y/N) N

ANALYTE		CE	,		CURVE		COEFFICIENT		#	MIN CF	%RSD	#	MAX R^2 # MIN R
	LVL 1 LVL 5	LVL 2 LVL 6	LVL 3 LVL 7	LVL 4	TYPE	В	M1	M2					%RSD OR COD OR CO
13C2 PFUnA	44988 38449	44201 37291	43197 36369	40609	Ave		40729.2057				8.5		50.0
d-N-MeFOSA-M	43738 47802	46683 49088	45921 50400	46173	Ave		47115.0286				4.7		50.0
13C2 PFDoA	44229 43579	48028 44039	45365 41750	45595	Ave		44655.0257				4.4		50.0
d-N-EtFOSA-M	45907 49432	47864 50609	48019 51479	48529	Ave		48833.9629				3.8		50.0
13C2-PFTeDA	86593 82283	87322 74668	84744 74283	78620	Ave		81216.2029				6.7		50.0
13C2-PFHxDA	40457 40950	42593 41518	41778 38464	43387	Ave		41306.8029				3.9		50.0

Note: The M1 coefficient is the same as Ave CF for an Ave curve type.

FORM VI LCMS BY ISOTOPIC DILUTION - INITIAL CALIBRATION DATA CURVE EVALUATION

Lab Name: TestAmerica Sacramento Job No.: 320-29732-1 Analy Batch No.: 175476

SDG No.:

Instrument ID: A8_N GC Column: GeminiC18 3 ID: 3(mm) Heated Purge: (Y/N) N

ANALYTE			RRF			CURVE		COEFFICI	ENT	#	MIN RRF	%RSD		R^2	# MIN R^2
	LVL 1 LVL 6	LVL 2 LVL 7	LVL 3	LVL 4	LVL 5	TYPE	В	M1	M2				%RSD	OR COD	OR COD
Perfluorobutanoic acid (PFBA)	0.9204	0.9010 0.7384	0.9703	0.9219	0.8832	AveID		0.8820				8.5	35.	0	
Perfluoropentanoic acid (PFPeA)	1.3238 1.0162	1.0545 0.8979	1.0382	0.9999	0.9641	AveID		1.0421				12.9	35.	0	
Perfluorobutanesulfonic acid (PFBS)	1.6998 1.3352	1.5456 1.1643	1.6131	1.5877	1.4777	AveID		1.4891				12.3	50.	0	
4:2 FTS	1.1772 0.9459		1.0386	0.9471	0.9206	AveID		0.9713				11.0	35.	0	
Perfluorohexanoic acid (PFHxA)	1.0731 0.9221	0.9512 0.8534	0.9809	0.9481	0.9357	AveID		0.9521				7.0	35.	0	
Perfluoroheptanoic acid (PFHpA)	1.2195 0.9596		1.0084	0.9973				1.0264				9.1	35.	0	
Perfluorohexanesulfonic acid (PFHxS)	1.3400 1.0197		1.0488	1.0267	1.0066	AveID		1.0819				11.8	35.	0	
6:2FTS	0.9739 0.8557		0.9369	0.9112	0.8685	AveID		0.8958				8.4	35.	0	
Perfluorooctanoic acid (PFOA)	1.1606 1.0660			1.1094	1.0181	AveID		1.0668				5.1	35.	0	
Perfluoroheptanesulfonic Acid (PFHpS)	1.1568 1.0561		1.1726	1.1912	1.1318	AveID		1.1216				5.7	50.	0	
Perfluorooctanesulfonic acid (PFOS)	1.1299 0.9935		1.0888	1.0669	1.0166	AveID		1.0572				4.3	35.	0	
Perfluorononanoic acid (PFNA)	1.1047 0.9716	1.0187 0.9554	1.0561	1.0408	0.9796	AveID		1.0181				5.2	35.	0	
Perfluorooctane Sulfonamide (FOSA)	1.0272 0.8960		0.9579	0.9280	0.8811	AveID		0.9018				9.5	35.	0	
8:2FTS	1.0464 0.8769	0.7991	0.9720					0.9107				9.6	35.	0	
Perfluorodecanoic acid (PFDA)	1.1112 0.9934		0.9721	0.9707				0.9799				6.7	35.	0	
N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA)	0.8705 0.9391	0.9213						0.9100				2.5			
Perfluorodecanesulfonic acid (PFDS)	0.6243 0.6204	0.6109 0.6007						0.6225				2.2	50.	0	
N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)	0.8814 0.8445	0.8378		0.8398				0.8488				1.9	35.		
Perfluoroundecanoic acid (PFUnA)	1.2295 1.0508		1.0802	1.0299	1.0189	L2ID	0.1085	1.0255						0.9990	0.9900

Note: The M1 coefficient is the same as Ave RRF for an Ave curve type.

FORM VI LCMS BY ISOTOPIC DILUTION - INITIAL CALIBRATION DATA CURVE EVALUATION

Lab Name: TestAmerica Sacramento Job No.: 320-29732-1 Analy Batch No.: 175476

SDG No.:

Instrument ID: A8_N GC Column: GeminiC18 3 ID: 3(mm) Heated Purge: (Y/N) N

ANALYTE			RRF			CURVE		COEFFICI	ENT	#	MIN RRF	%RSD	l I	MAX	R^2	# MIN R^2
	LVL 1	LVL 2	LVL 3	LVL 4	LVL 5	TYPE	В	М1	M2					%RSD	OR COD	OR COD
	LVL 6	LVL 7														
MeFOSA	0.9495	0.9226	0.9323	0.8949	0.8832	AveID		0.9183				2.5		35.0		
	0.9322	0.9137														
Perfluorododecanoic acid (PFDoA)	1.0282	0.8102	0.9356	0.9516	0.9917	AveID		0.9292				9.0		35.0		
	0.8184	0.9686														
N-EtFOSA-M	0.9929	0.9027	0.9210	0.9341	0.9138	AveID		0.9274				3.5		35.0		
	0.8945	0.9325														
Perfluorotridecanoic Acid (PFTriA)	0.9003	0.8007	0.8869	0.8608	0.8385	AveID		0.8514				4.1		50.0		
	0.8527	0.8199														
Perfluorotetradecanoic acid (PFTeA)	2.0864	2.2652	2.0671	1.8798	1.7315	AveID		1.9220				11.6		50.0		
	1.7552	1.6691														
Perfluoro-n-hexadecanoic acid (PFHxDA)	+++++	1.3172	0.9121	0.7967	0.7855	L2ID	0.5273	0.7917							1.0000	0.9900
	0.8094	0.8067														
Perfluoro-n-octadecanoic acid (PFODA)	0.9408	0.6844	0.7391	0.7194	0.7336	AveID		0.7652				10.8		50.0		
	0.7740	0.7651														

Note: The M1 coefficient is the same as Ave RRF for an Ave curve type.

LCMS BY EXTERNAL STANDARD - INITIAL CALIBRATION DATA RESPONSE AND CONCENTRATION

Lab Name: TestAmerica Sacramento Job No.: 320-29732-1 Analy Batch No.: 175476

SDG No.:

Instrument ID: A8_N GC Column: GeminiC18 3 ID: 3 (mm) Heated Purge: (Y/N) N

Calibration Files:

LEVEL:	LAB SAMPLE ID:	LAB FILE ID:	
Level 1	IC 320-175476/3	2017.07.23ICAL 003.d	
Level 2	IC 320-175476/4	2017.07.23ICAL 004.d	
Level 3	IC 320-175476/5	2017.07.23ICAL 005.d	
Level 4	IC 320-175476/6	2017.07.23ICAL 006.d	
Level 5	IC 320-175476/7	2017.07.23ICAL 007.d	
Level 6	IC 320-175476/8	2017.07.23ICAL 008.d	
Level 7	IC 320-175476/9	2017.07.23ICAL 009.d	

ANALYTE	CURVE			RESPONSE				CONCEN	NTRATION (N	IG/ML)	
	TYPE	LVL 1 LVL 6	LVL 2 LVL 7	LVL 3	LVL 4	LVL 5	LVL 1 LVL 6	LVL 2 LVL 7	LVL 3	LVL 4	LVL 5
13C4 PFBA	Ave	7602651 7747958	8198998 7209685	7724731	8240620	7884062	50.0 50.0	50.0 50.0	50.0	50.0	50.0
13C5 PFPeA	Ave	5616511 5356421	5663549 4874149	5745028	5749559	5668374	50.0 50.0	50.0 50.0	50.0	50.0	50.0
13C2 PFH×A	Ave	4962539 4765607	5341252 4793468	5205527	5262198	5074168	50.0 50.0	50.0 50.0	50.0	50.0	50.0
13C4-PFHpA	Ave	4134680 4123520	4345666 3662996	4502179	4306431	4262989	50.0 50.0	50.0 50.0	50.0	50.0	50.0
1802 PFHxS	Ave	6275582 6433219	6658501 6181226	6569473	6720545	6667053	47.3 47.3	47.3 47.3	47.3	47.3	47.3
M2-6:2FTS	Ave	2107584 2191385	2357266 2239134	2227990	2324738	2365496	47.5 47.5	47.5 47.5	47.5	47.5	47.5
13C4 PFOA	Ave	4183627 3678248	4393535 3327722	4232863	4524447	4409764	50.0 50.0	50.0 50.0	50.0	50.0	50.0
13C4 PFOS	Ave	5224495 5213679	5300156 5116508	5180018	5053172	5115538	47.8 47.8	47.8 47.8	47.8	47.8	47.8
13C5 PFNA	Ave	3493409 3093351	3531702 2859301	3490997	3245282	3295100	50.0 50.0	50.0 50.0	50.0	50.0	50.0
13C8 FOSA	Ave	9011527 8997387	9352506 8798953	9138842	9219278	9462080	50.0 50.0	50.0 50.0	50.0	50.0	50.0
M2-8:2FTS	Ave	1761561 1666985	1701481 1732871	1748653	1765647	1861315	47.9 47.9	47.9 47.9	47.9	47.9	47.9
13C2 PFDA	Ave	2736338 2576945	2960870 2614091	2973174	2858875	2822332	50.0 50.0	50.0 50.0	50.0	50.0	50.0
d3-NMeFOSAA	Ave	1050614 1068765	1049350 1133763	1090209	1065558	1147829	50.0 50.0	50.0 50.0	50.0	50.0	50.0
d5-NEtFOSAA	Ave	1093392 1068267	1132292 1056852	1136911	1132733	1055395	50.0 50.0	50.0 50.0	50.0	50.0	50.0
13C2 PFUnA	Ave	2249395 1864568	2210040 1818459	2159853	2030463	1922444	50.0 50.0	50.0 50.0	50.0	50.0	50.0

LCMS BY EXTERNAL STANDARD - INITIAL CALIBRATION DATA RESPONSE AND CONCENTRATION

Lab Name: TestAmerica Sacramento

SDG No.:

Instrument ID: A8_N

Calibration Start Date: 07/23/2017 13:10

GD No.: 320-29732-1

Analy Batch No.: 175476

Better No.: 175476

Analy Batch No.: 175476

Better No.: 175476

Column: Geminic18 3 ID: 3(mm)

Heated Purge: (Y/N) N

Calibration Start Date: 07/23/2017 13:58

Calibration ID: 32678

A	NALYTE CURV			RESPONSE				CONCEN	NTRATION (N	G/ML)	
	TYP:	LVL 1 LVL 6	LVL 2 LVL 7	LVL 3	LVL 4	LVL 5	LVL 1 LVL 6	LVL 2 LVL 7	LVL 3	LVL 4	LVL 5
d-N-MeFOSA-M	Ave	2186880 2454402	2334174 2520018	2296036	2308671	2390079	50.0 50.0	50.0 50.0	50.0	50.0	50.0
13C2 PFDoA	Ave	2211449 2201944	2401406 2087489	2268225	2279772	2178974	50.0 50.0	50.0 50.0	50.0	50.0	50.0
d-N-EtFOSA-M	Ave	2295325 2530450	2393195 2573945	2400939	2426441	2471592	50.0 50.0	50.0 50.0	50.0	50.0	50.0
13C2-PFTeDA	Ave	4329665 3733385	4366113 3714139	4237183	3931018	4114168	50.0 50.0	50.0 50.0	50.0	50.0	50.0
13C2-PFHxDA	Ave	2022870 2075916	2129628 1923205	2088906	2169354	2047502	50.0 50.0	50.0 50.0	50.0	50.0	50.0

Curve Type Legend:

Ave = Average

LCMS BY ISOTOPIC DILUTION - INITIAL CALIBRATION DATA RESPONSE AND CONCENTRATION

Lab Name: TestAmerica Sacramento Job No.: 320-29732-1 Analy Batch No.: 175476

SDG No.:

Instrument ID: A8_N GC Column: GeminiC18 3 ID: 3 (mm) Heated Purge: (Y/N) N

Calibration Files:

LEVEL:	LAB SAMPLE ID:	LAB FILE ID:
Level 1	IC 320-175476/3	2017.07.23ICAL 003.d
Level 2	IC 320-175476/4	2017.07.23ICAL 004.d
Level 3	IC 320-175476/5	2017.07.23ICAL 005.d
Level 4	IC 320-175476/6	2017.07.23ICAL 006.d
Level 5	IC 320-175476/7	2017.07.23ICAL 007.d
Level 6	IC 320-175476/8	2017.07.23ICAL 008.d
Level 7	IC 320-175476/9	2017.07.23ICAL 009.d

ANALYTE	IS CUR			RESPONSE				CONCE	NTRATION (N	G/ML)	
	REF TYI	E LVL 1 LVL 6	LVL 2 LVL 7	LVL 3	LVL 4	LVL 5	LVL 1 LVL 6	LVL 2 LVL 7	LVL 3	LVL 4	LVL 5
Perfluorobutanoic acid (PFBA)	Ave	ID 69975 12999409	147752 21295694	749523	3038741	6963312	0.500 100	1.00 200	5.00	20.0	50.0
Perfluoropentanoic acid (PFPeA)	Ave	TD 74351 10886829	119448 17506811	596471	2299701	5464599	0.500 100	1.00 200	5.00	20.0	50.0
Perfluorobutanesulfonic acid (PFBS)	Ave	ID 99684 16053252	192335 26901153	990268	3988481	9206165	0.442 88.4	0.884 177	4.42	17.7	44.2
4:2 FTS	Ave	ID 24392 4075896	42922 7430551	227509	865853	2141036	0.467 93.4	0.934 187	4.67	18.7	46.7
Perfluorohexanoic acid (PFHxA)	Ave	ID 53254 8788456	101614 16363337	510606	1995591	4748124	0.500 100	1.00 200	5.00	20.0	50.0
Perfluoroheptanoic acid (PFHpA)	Ave	TD 50421 7914021	92990 14130024	453995	1717995	4116140	0.500 100	1.00 200	5.00	20.0	50.0
Perfluorohexanesulfonic acid (PFHxS)	Ave	ID 80894 12621118	148222 23173026	662781	2654948	6455854	0.455 91.0	0.910 182	4.55	18.2	45.5
6:2FTS	Ave	ID 20482 3742357	45441 6779939	208291	845572	2050076	0.474 94.8	0.948 190	4.74	19.0	47.4
Perfluorooctanoic acid (PFOA)	Ave	ID 48556 7841830	88318 13780241	454115	2007679	4489705	0.500 100	1.00 200	5.00	20.0	50.0
Perfluoroheptanesulfonic Acid (PFHpS)	Ave	ID 60184 10965918	119224 20645661	604887	2397725	5765727	0.476 95.2	0.952 190	4.76	19.0	47.6
Perfluorooctanesulfonic acid (PFOS)	Ave	ID 57301 10055816	109083 20749676	547466	2093353	5048139	0.464 92.8	0.928 186	4.64	18.6	46.4
Perfluorononanoic acid (PFNA)	Ave	ID 38591 6011197	71952 10926680	368688	1351075	3227789	0.500 100	1.00 200	5.00	20.0	50.0
Perfluorooctane Sulfonamide (FOSA)	Ave	D 92569 16123202	162978 26444981	875387	3422187	8336711	0.500 100	1.00 200	5.00	20.0	50.0
8:2FTS	Ave	ID 18433 2923571	32668 5538945	169963	630739	1539793	0.479 95.8	0.958 192	4.79	19.2	47.9
Perfluorodecanoic acid (PFDA)	Ave	ID 30405 5119744	57947 9589389	289035	1110082	2585881	0.500 100	1.00 200	5.00	20.0	50.0

FORM VI LCMS BY ISOTOPIC DILUTION - INITIAL CALIBRATION DATA RESPONSE AND CONCENTRATION

Lab Name: TestAmerica Sacramento Job No.: 320-29732-1 Analy Batch No.: 175476

SDG No.:

Instrument ID: A8 N GC Column: GeminiC18 3 ID: 3(mm) Heated Purge: (Y/N) N

ANALYTE	IS	CURVE			RESPONSE				CONCEN	NTRATION (N	IG/ML)	
	REF	TYPE	LVL 1 LVL 6	LVL 2 LVL 7	LVL 3	LVL 4	LVL 5	LVL 1 LVL 6	LVL 2 LVL 7	LVL 3	LVL 4	LVL 5
N-methyl perfluorooctane		AveID	9146	19166	97239	395381	1039957	0.500	1.00	5.00	20.0	50.0
sulfonamidoacetic acid (NMeFOSAA)			2007359	4177961				100	200			
Perfluorodecanesulfonic acid (PFDS)		AveID	32887 6522922	65294 12396187	335448	1294446	3217983	0.482 96.4	0.964 193	4.82	19.3	48.2
N-ethyl perfluorooctane		AveID	9637	18976	97401	380509	890173	0.500	1.00	5.00	20.0	50.0
sulfonamidoacetic acid (NEtFOSAA)			1804400	3541684				100	200			
Perfluoroundecanoic acid (PFUnA)		L2ID	27657	50978	233311	836437	1958756	0.500	1.00	5.00	20.0	50.0
			3918710	7069518				100	200			
MeFOSA		AveID	20765	43069	214053	826400	2110821	0.500	1.00	5.00	20.0	50.0
			4575819	9209985				100	200			
Perfluorododecanoic acid (PFDoA)		AveID	22738	38911	212214	867758	2160889	0.500	1.00	5.00	20.0	50.0
			3604171	8087946				100	200			
N-EtFOSA-M		AveID	22791	43208	221116	906622	2258565	0.500	1.00	5.00	20.0	50.0
			4527078	9600643				100	200			
Perfluorotridecanoic Acid (PFTriA)		AveID	19909	38455	201160	784927	1827022	0.500	1.00	5.00	20.0	50.0
			3755028	6846516				100	200			
Perfluorotetradecanoic acid (PFTeA)		AveID	46140	108795	468872	1714163	3772981	0.500	1.00	5.00	20.0	50.0
			7729497	13936575				100	200			
Perfluoro-n-hexadecanoic acid		L2ID	+++++	63261	206894	726480	1711676	+++++	1.00	5.00	20.0	50.0
(PFHxDA)			3564510	6735864				100	200			
Perfluoro-n-octadecanoic acid		AveID	20805	32872	167649	655993	1598412	0.500	1.00	5.00	20.0	50.0
(PFODA)			3408805	6388834				100	200			

Curve Type Legend:

AveID = Average isotope dilution

L2ID = Linear 1/conc^2 IsoDil

Lab Name: TestAmerica Sacramento Job No.: 320-29732-1

SDG No.:

Lab Sample ID: <u>ICV 320-175476/12</u> Calibration Date: <u>07/23/2017 14:12</u>

Instrument ID: A8_N Calib Start Date: 07/23/2017 13:10

GC Column: GeminiC18 3x100 ID: 3.00 (mm) Calib End Date: 07/23/2017 13:58

Lab File ID: 2017.07.23ICAL_012.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanoic acid (PFBA)	AveID	0.8820	0.9506		53.4	49.5	7.8	25.0
Perfluoropentanoic acid (PFPeA)	AveID	1.042	1.048		49.8	49.5	0.6	25.0
Perfluorobutanesulfonic acid (PFBS)	AveID	1.489	1.590		46.8	43.8	6.8	25.0
Perfluorohexanoic acid (PFHxA)	AveID	0.9521	1.064		55.3	49.5	11.7	25.0
Perfluoroheptanoic acid (PFHpA)	AveID	1.026	1.096		52.9	49.5	6.8	25.0
Perfluorohexanesulfonic acid (PFHxS)	AveID	1.082	1.064		46.0	46.8	-1.7	25.0
6:2FTS	AveID	0.8958	0.8826		46.2	46.9	-1.5	25.0
Perfluorooctanoic acid (PFOA)	AveID	1.067	1.145		53.1	49.5	7.3	25.0
Perfluoroheptanesulfonic Acid (PFHpS)	AveID	1.122	1.189		50.0	47.1	6.0	25.0
Perfluorononanoic acid (PFNA)	AveID	1.018	1.057		51.4	49.5	3.8	25.0
Perfluorooctanesulfonic acid (PFOS)	AveID	1.057	0.9909		44.3	47.3	-6.3	25.0
Perfluorooctane Sulfonamide (FOSA)	AveID	0.9018	1.006		55.2	49.5	11.5	25.0
8:2FTS	AveID	0.9107	0.9482		49.4	47.4	4.1	25.0
Perfluorodecanoic acid (PFDA)	AveID	0.9799	1.021		51.6	49.5	4.2	25.0
N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA)	AveID	0.9100	1.004		54.6	49.5	10.3	25.0
Perfluorodecanesulfonic acid (PFDS)	AveID	0.6225	0.7165		55.0	47.8	15.1	25.0
N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)	AveID	0.8488	0.9413		54.9	49.5	10.9	25.0
Perfluoroundecanoic acid (PFUnA)	L2ID		1.065		51.3	49.5	3.6	25.0
MeFOSA	AveID	0.9183	0.9367		50.5	49.5	2.0	25.0
Perfluorododecanoic acid (PFDoA)	AveID	0.9292	1.075		57.3	49.5	15.7	25.0
N-EtFOSA-M	AveID	0.9274	1.041		55.6	49.5	12.2	25.0
Perfluorotridecanoic Acid (PFTriA)	AveID	0.8514	0.9886		57.5	49.5	16.1	25.0
Perfluorotetradecanoic acid (PFTeA)	AveID	1.922	2.177		56.1	49.5	13.3	25.0
Perfluoro-n-hexadecanoic acid (PFHxDA)	L2ID		0.8767		54.2	49.5	9.4	25.0
Perfluoro-n-octadecanoic acid (PFODA)	AveID	0.7652	0.8436		54.6	49.5	10.2	25.0
13C4 PFBA	Ave	156025	157873		50.1	49.5	1.2	50.0
13C5 PFPeA	Ave	110496	108697		48.7	49.5	-1.6	50.0
13C2 PFHxA	Ave	101156	98061		48.0	49.5	-3.1	50.0
13C4-PFHpA	Ave	83824	83605		49.4	49.5	-0.3	50.0
1802 PFHxS	Ave	137438	142796		48.7	46.8	3.9	50.0
M2-6:2FTS	Ave	47560	48376		47.8	47.0	1.7	50.0

Lab Name: TestAmerica Sacramento Job No.: 320-29732-1

SDG No.:

Lab Sample ID: <u>ICV 320-175476/12</u> Calibration Date: <u>07/23/2017 14:12</u>

Instrument ID: A8_N Calib Start Date: 07/23/2017 13:10

GC Column: GeminiC18 3×100 ID: 3.00 (mm) Calib End Date: 07/23/2017 13:58

Lab File ID: 2017.07.23ICAL_012.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE CF	CF	MIN CF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
13C4 PFOA	Ave	82143	77215		46.5	49.5	-6.0	50.0
13C4 PFOS	Ave	108200	104794		45.8	47.3	-3.1	50.0
13C5 PFNA	Ave	65740	60434		45.5	49.5	-8.1	50.0
13C8 FOSA	Ave	182802	161974		43.9	49.5	-11.4	50.0
M2-8:2FTS	Ave	36500	35620		46.3	47.4	-2.4	50.0
13C2 PFDA	Ave	55836	55227		49.0	49.5	-1.1	50.0
d3-NMeFOSAA	Ave	21732	20364		46.4	49.5	-6.3	50.0
13C2 PFUnA	Ave	40729	38417		46.7	49.5	-5.7	50.0
d5-NEtFOSAA	Ave	21931	21506		48.5	49.5	-1.9	50.0
d-N-MeFOSA-M	Ave	47115	46615		49.0	49.5	-1.1	50.0
13C2 PFDoA	Ave	44655	37731		41.8	49.5	-15.5	50.0
d-N-EtFOSA-M	Ave	48834	45694		46.3	49.5	-6.4	50.0
13C2-PFTeDA	Ave	81216	74362		45.3	49.5	-8.4	50.0
13C2-PFH×DA	Ave	41307	34907		41.8	49.5	-15.5	50.0

LCMS ANALYSIS RUN LOG

Lab Name: TestAmerica Sacramento	Job No.: 320-29732-1
SDG No.:	
Instrument ID: A8_N	Start Date: 07/23/2017 14:32
Analysis Batch Number: 175528	End Date: 07/23/2017 17:18

LAB SAMPLE ID	CLIENT SAMPLE ID	DATE ANALYZED	DILUTION	LAB FILE ID	COLUMN ID
			FACTOR		
CCV 320-175528/1		07/23/2017 14:32	1	2017.07.23A_001	GeminiC18 3x100 3(mm)
MB 320-175097/1-A		07/23/2017 14:39	1	.d 2017.07.23A_002	GeminiC18 3x100 3(mm)
LCS 320-175097/2-A		07/23/2017 14:46	1	2017.07.23A_003	GeminiC18 3x100 3(mm)
LCSD 320-175097/3-A		07/23/2017 14:53	1	2017.07.23A_004	GeminiC18 3x100 3(mm)
CCV 320-175528/12		07/23/2017 15:48	1	2017.07.23A_012 .d	GeminiC18 3x100 3(mm)
320-29732-1		07/23/2017 16:16	1	2017.07.23A_016 .d	GeminiC18 3x100 3(mm)
ZZZZZ		07/23/2017 16:23	1		GeminiC18 3x100 3(mm)
320-29732-3		07/23/2017 16:30	1	2017.07.23A_018 .d	GeminiC18 3x100 3(mm)
CCV 320-175528/21		07/23/2017 16:50	1	2017.07.23A_021 .d	GeminiC18 3x100 3(mm)
CCV 320-175528/25		07/23/2017 17:18	1		GeminiC18 3x100 3(mm)

Lab Name: TestAmerica Sacramento Job No.: 320-29732-1

SDG No.:

Lab Sample ID: <u>CCV 320-175528/1</u> Calibration Date: <u>07/23/2017 14:32</u>

Instrument ID: A8_N Calib Start Date: 07/23/2017 13:10

GC Column: GeminiC18 3×100 ID: 3.00 (mm) Calib End Date: 07/23/2017 13:58

Lab File ID: 2017.07.23A_001.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanoic acid (PFBA)	AveID	0.8820	0.9494		21.5	20.0	7.6	25.0
Perfluoropentanoic acid (PFPeA)	AveID	1.042	0.9792		18.8	20.0	-6.0	25.0
Perfluorobutanesulfonic acid (PFBS)	AveID	1.489	1.501		17.8	17.7	0.8	25.0
Perfluorohexanoic acid (PFHxA)	AveID	0.9521	0.9645		20.3	20.0	1.3	25.0
Perfluoroheptanoic acid (PFHpA)	AveID	1.026	1.025		20.0	20.0	-0.1	25.0
Perfluorohexanesulfonic acid (PFHxS)	AveID	1.082	1.015		17.1	18.2	-6.2	25.0
6:2FTS	AveID	0.8958	0.9016		19.1	19.0	0.6	25.0
Perfluoroheptanesulfonic Acid (PFHpS)	AveID	1.122	1.185		20.1	19.0	5.6	25.0
Perfluorooctanoic acid (PFOA)	AveID	1.067	1.072		20.1	20.0	0.5	25.0
Perfluorooctanesulfonic acid (PFOS)	AveID	1.057	1.023		18.0	18.6	-3.2	25.0
Perfluorononanoic acid (PFNA)	AveID	1.018	0.9787		19.2	20.0	-3.9	25.0
8:2FTS	AveID	0.9107	0.9893		20.8	19.2	8.6	25.0
Perfluorooctane Sulfonamide (FOSA)	AveID	0.9018	0.9496		21.1	20.0	5.3	25.0
Perfluorodecanoic acid (PFDA)	AveID	0.9799	0.9576		19.5	20.0	-2.3	25.0
N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA)	AveID	0.9100	0.9797		21.5	20.0	7.7	25.0
Perfluorodecanesulfonic acid (PFDS)	AveID	0.6225	0.6356		19.7	19.3	2.1	25.0
N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)	AveID	0.8488	0.8613		20.3	20.0	1.5	25.0
Perfluoroundecanoic acid (PFUnA)	L2ID		0.9846		19.1	20.0	-4.5	25.0
MeFOSA	AveID	0.9183	0.9054		19.7	20.0	-1.4	25.0
Perfluorododecanoic acid (PFDoA)	AveID	0.9292	0.8874		19.1	20.0	-4.5	25.0
N-EtFOSA-M	AveID	0.9274	0.8972		19.3	20.0	-3.3	25.0
Perfluorotridecanoic Acid (PFTriA)	AveID	0.8514	0.8317		19.5	20.0	-2.3	25.0
Perfluorotetradecanoic acid (PFTeA)	AveID	1.922	1.773		18.4	20.0	-7.8	25.0
Perfluoro-n-hexadecanoic acid (PFHxDA)	L2ID		0.8414		20.6	20.0	2.9	25.0
Perfluoro-n-octadecanoic acid (PFODA)	AveID	0.7652	0.7982		20.9	20.0	4.3	25.0
13C4 PFBA	Ave	156025	165858		53.2	50.0	6.3	50.0
13C5 PFPeA	Ave	110496	115893		52.4	50.0	4.9	50.0
13C2 PFHxA	Ave	101156	100943		49.9	50.0	-0.2	50.0
13C4-PFHpA	Ave	83824	86101		51.4	50.0	2.7	50.0
1802 PFHxS	Ave	137438	143304		49.3	47.3	4.3	50.0
M2-6:2FTS	Ave	47560	46861		46.8	47.5	-1.5	50.0

Lab Name: TestAmerica Sacramento Job No.: 320-29732-1

SDG No.:

Lab Sample ID: <u>CCV 320-175528/1</u> Calibration Date: <u>07/23/2017 14:32</u>

Instrument ID: <u>A8_N</u> Calib Start Date: 07/23/2017 13:10

GC Column: GeminiC18 3×100 ID: 3.00 (mm) Calib End Date: 07/23/2017 13:58

Lab File ID: 2017.07.23A_001.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE CF	CF	MIN CF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
13C4 PFOA	Ave	82143	85050		51.8	50.0	3.5	50.0
13C4 PFOS	Ave	108200	109417		48.3	47.8	1.1	50.0
13C5 PFNA	Ave	65740	69516		52.9	50.0	5.7	50.0
13C8 FOSA	Ave	182802	182496		49.9	50.0	-0.2	50.0
M2-8:2FTS	Ave	36500	34084		44.7	47.9	-6.6	50.0
13C2 PFDA	Ave	55836	57163		51.2	50.0	2.4	50.0
d3-NMeFOSAA	Ave	21732	20701		47.6	50.0	-4.7	50.0
13C2 PFUnA	Ave	40729	39583		48.6	50.0	-2.8	50.0
d5-NEtFOSAA	Ave	21931	21686		49.4	50.0	-1.1	50.0
d-N-MeFOSA-M	Ave	47115	45773		48.6	50.0	-2.8	50.0
13C2 PFDoA	Ave	44655	41237		46.2	50.0	-7.7	50.0
d-N-EtFOSA-M	Ave	48834	48692		49.9	50.0	-0.3	50.0
13C2-PFTeDA	Ave	81216	74066		45.6	50.0	-8.8	50.0
13C2-PFHxDA	Ave	41307	39421		47.7	50.0	-4.6	50.0

Lab Name: TestAmerica Sacramento Job No.: 320-29732-1

SDG No.:

Lab Sample ID: CCV 320-175528/12 Calibration Date: 07/23/2017 15:48

Instrument ID: A8_N Calib Start Date: 07/23/2017 13:10

GC Column: GeminiC18 3×100 ID: 3.00 (mm) Calib End Date: 07/23/2017 13:58

Lab File ID: 2017.07.23A_012.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanoic acid (PFBA)	AveID	0.8820	0.9029		51.2	50.0	2.4	25.0
Perfluoropentanoic acid (PFPeA)	AveID	1.042	1.006		48.3	50.0	-3.5	25.0
Perfluorobutanesulfonic acid (PFBS)	AveID	1.489	1.478		43.9	44.2	-0.7	25.0
Perfluorohexanoic acid (PFHxA)	AveID	0.9521	0.9398		49.4	50.0	-1.3	25.0
Perfluoroheptanoic acid (PFHpA)	AveID	1.026	0.9913		48.3	50.0	-3.4	25.0
Perfluorohexanesulfonic acid (PFHxS)	AveID	1.082	1.034		43.5	45.5	-4.4	25.0
6:2FTS	AveID	0.8958	0.8465		44.8	47.4	-5.5	25.0
Perfluorooctanoic acid (PFOA)	AveID	1.067	0.9815		46.0	50.0	-8.0	25.0
Perfluoroheptanesulfonic Acid (PFHpS)	AveID	1.122	1.119		47.5	47.6	-0.2	25.0
Perfluorononanoic acid (PFNA)	AveID	1.018	1.012		49.7	50.0	-0.6	25.0
Perfluorooctanesulfonic acid (PFOS)	AveID	1.057	1.023		44.9	46.4	-3.2	25.0
8:2FTS	AveID	0.9107	0.8344		43.9	47.9	-8.4	25.0
Perfluorodecanoic acid (PFDA)	AveID	0.9799	0.9414		48.0	50.0	-3.9	25.0
Perfluorooctane Sulfonamide (FOSA)	AveID	0.9018	0.9253		51.3	50.0	2.6	25.0
N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA)	AveID	0.9100	0.8838		48.6	50.0	-2.9	25.0
Perfluorodecanesulfonic acid (PFDS)	AveID	0.6225	0.5885		45.6	48.2	-5.5	25.0
N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)	AveID	0.8488	0.8455		49.8	50.0	-0.4	25.0
Perfluoroundecanoic acid (PFUnA)	L2ID		0.9582		46.6	50.0	-6.8	25.0
MeFOSA	AveID	0.9183	0.8759		47.7	50.0	-4.6	25.0
Perfluorododecanoic acid (PFDoA)	AveID	0.9292	0.8987		48.4	50.0	-3.3	25.0
N-EtFOSA-M	AveID	0.9274	0.9011		48.6	50.0	-2.8	25.0
Perfluorotridecanoic Acid (PFTriA)	AveID	0.8514	0.8566		50.3	50.0	0.6	25.0
Perfluorotetradecanoic acid (PFTeA)	AveID	1.922	1.865		48.5	50.0	-3.0	25.0
Perfluoro-n-hexadecanoic acid (PFHxDA)	L2ID		0.8124		50.6	50.0	1.3	25.0
Perfluoro-n-octadecanoic acid (PFODA)	AveID	0.7652	0.8180		53.5	50.0	6.9	25.0
13C4 PFBA	Ave	156025	168207		53.9	50.0	7.8	50.0
13C5 PFPeA	Ave	110496	115246		52.1	50.0	4.3	50.0
13C2 PFHxA	Ave	101156	101804		50.3	50.0	0.6	50.0
13C4-PFHpA	Ave	83824	86264		51.5	50.0	2.9	50.0
1802 PFHxS	Ave	137438	140919		48.5	47.3	2.5	50.0
M2-6:2FTS	Ave	47560	48401		48.3	47.5	1.8	50.0

Lab Name: TestAmerica Sacramento Job No.: 320-29732-1

SDG No.:

Lab Sample ID: CCV 320-175528/12 Calibration Date: 07/23/2017 15:48

Instrument ID: A8_N Calib Start Date: 07/23/2017 13:10

GC Column: GeminiC18 3×100 ID: 3.00 (mm) Calib End Date: 07/23/2017 13:58

Lab File ID: 2017.07.23A_012.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE CF	CF	MIN CF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
13C4 PFOA	Ave	82143	84609		51.5	50.0	3.0	50.0
13C4 PFOS	Ave	108200	110381		48.8	47.8	2.0	50.0
13C5 PFNA	Ave	65740	63063		48.0	50.0	-4.1	50.0
M2-8:2FTS	Ave	36500	36015		47.3	47.9	-1.3	50.0
13C2 PFDA	Ave	55836	53544		47.9	50.0	-4.1	50.0
13C8 FOSA	Ave	182802	180199		49.3	50.0	-1.4	50.0
d3-NMeFOSAA	Ave	21732	21364		49.2	50.0	-1.7	50.0
d5-NEtFOSAA	Ave	21931	20780		47.4	50.0	-5.2	50.0
13C2 PFUnA	Ave	40729	39142		48.1	50.0	-3.9	50.0
d-N-MeFOSA-M	Ave	47115	47791		50.7	50.0	1.4	50.0
13C2 PFDoA	Ave	44655	38225		42.8	50.0	-14.4	50.0
d-N-EtFOSA-M	Ave	48834	50866		52.1	50.0	4.2	50.0
13C2-PFTeDA	Ave	81216	80494		49.6	50.0	-0.9	50.0
13C2-PFH×DA	Ave	41307	38552		46.7	50.0	-6.7	50.0

Lab Name: TestAmerica Sacramento Job No.: 320-29732-1

SDG No.:

Lab Sample ID: CCV 320-175528/21 Calibration Date: 07/23/2017 16:50

Instrument ID: A8_N Calib Start Date: 07/23/2017 13:10

GC Column: GeminiC18 3×100 ID: 3.00 (mm) Calib End Date: 07/23/2017 13:58

Lab File ID: 2017.07.23A_021.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanoic acid (PFBA)	AveID	0.8820	0.9379		21.3	20.0	6.3	25.0
Perfluoropentanoic acid (PFPeA)	AveID	1.042	1.031		19.8	20.0	-1.1	25.0
Perfluorobutanesulfonic acid (PFBS)	AveID	1.489	1.503		17.8	17.7	0.9	25.0
Perfluorohexanoic acid (PFHxA)	AveID	0.9521	0.9232		19.4	20.0	-3.0	25.0
Perfluoroheptanoic acid (PFHpA)	AveID	1.026	0.9873		19.2	20.0	-3.8	25.0
Perfluorohexanesulfonic acid (PFHxS)	AveID	1.082	1.013		17.0	18.2	-6.4	25.0
6:2FTS	AveID	0.8958	0.8597		18.2	19.0	-4.0	25.0
Perfluorooctanoic acid (PFOA)	AveID	1.067	1.043		19.6	20.0	-2.2	25.0
Perfluoroheptanesulfonic Acid (PFHpS)	AveID	1.122	1.243		21.1	19.0	10.8	25.0
Perfluorononanoic acid (PFNA)	AveID	1.018	1.020		20.0	20.0	0.2	25.0
Perfluorooctanesulfonic acid (PFOS)	AveID	1.057	1.048		18.4	18.6	-0.9	25.0
8:2FTS	AveID	0.9107	0.9236		19.4	19.2	1.4	25.0
Perfluorodecanoic acid (PFDA)	AveID	0.9799	0.9608		19.6	20.0	-2.0	25.0
Perfluorooctane Sulfonamide (FOSA)	AveID	0.9018	0.9238		20.5	20.0	2.4	25.0
N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA)	AveID	0.9100	0.9171		20.2	20.0	0.8	25.0
Perfluorodecanesulfonic acid (PFDS)	AveID	0.6225	0.6369		19.7	19.3	2.3	25.0
N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)	AveID	0.8488	0.8432		19.9	20.0	-0.7	25.0
Perfluoroundecanoic acid (PFUnA)	L2ID		1.050		20.4	20.0	1.9	25.0
MeFOSA	AveID	0.9183	0.8819		19.2	20.0	-4.0	25.0
Perfluorododecanoic acid (PFDoA)	AveID	0.9292	0.8799		18.9	20.0	-5.3	25.0
N-EtFOSA-M	AveID	0.9274	0.8905		19.2	20.0	-4.0	25.0
Perfluorotridecanoic Acid (PFTriA)	AveID	0.8514	0.9621		22.6	20.0	13.0	25.0
Perfluorotetradecanoic acid (PFTeA)	AveID	1.922	2.128		22.1	20.0	10.7	25.0
Perfluoro-n-hexadecanoic acid (PFHxDA)	L2ID		0.8696		21.3	20.0	6.5	25.0
Perfluoro-n-octadecanoic acid (PFODA)	AveID	0.7652	0.8649		22.6	20.0	13.0	25.0
13C4 PFBA	Ave	156025	173888		55.7	50.0	11.4	50.0
13C5 PFPeA	Ave	110496	117948		53.4	50.0	6.7	50.0
13C2 PFHxA	Ave	101156	103863		51.3	50.0	2.7	50.0
13C4-PFHpA	Ave	83824	89637		53.5	50.0	6.9	50.0
1802 PFHxS	Ave	137438	145465		50.1	47.3	5.8	50.0
M2-6:2FTS	Ave	47560	49323		49.3	47.5	3.7	50.0

Lab Name: TestAmerica Sacramento Job No.: 320-29732-1

SDG No.:

Lab Sample ID: CCV 320-175528/21 Calibration Date: 07/23/2017 16:50

Instrument ID: <u>A8_N</u> Calib Start Date: 07/23/2017 13:10

GC Column: GeminiC18 3×100 ID: 3.00 (mm) Calib End Date: 07/23/2017 13:58

Lab File ID: 2017.07.23A_021.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE CF	CF	MIN CF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
13C4 PFOA	Ave	82143	84145		51.2	50.0	2.4	50.0
13C4 PFOS	Ave	108200	104664		46.2	47.8	-3.3	50.0
13C5 PFNA	Ave	65740	62537		47.6	50.0	-4.9	50.0
M2-8:2FTS	Ave	36500	34924		45.8	47.9	-4.3	50.0
13C2 PFDA	Ave	55836	54622		48.9	50.0	-2.2	50.0
13C8 FOSA	Ave	182802	181189		49.6	50.0	-0.9	50.0
d3-NMeFOSAA	Ave	21732	20224		46.5	50.0	-6.9	50.0
d5-NEtFOSAA	Ave	21931	21268		48.5	50.0	-3.0	50.0
13C2 PFUnA	Ave	40729	36927		45.3	50.0	-9.3	50.0
d-N-MeFOSA-M	Ave	47115	46769		49.6	50.0	-0.7	50.0
13C2 PFDoA	Ave	44655	37023		41.5	50.0	-17.1	50.0
d-N-EtFOSA-M	Ave	48834	48239		49.4	50.0	-1.2	50.0
13C2-PFTeDA	Ave	81216	71157		43.8	50.0	-12.4	50.0
13C2-PFH×DA	Ave	41307	35798		43.3	50.0	-13.3	50.0

LCMS ANALYSIS RUN LOG

Lab Name: TestAmerica Sacramento	Job No.: 320-29732-1					
SDG No.:						
Instrument ID: A8_N	Start Date: 07/24/2017 11:42					
Analysis Batch Number: 175631	End Date: 07/24/2017 12:23					

LAB SAMPLE ID	CLIENT SAMPLE ID	DATE ANALYZED	DILUTION FACTOR	LAB FILE ID	COLUMN ID
CCVL 320-175631/2		07/24/2017 11:42	1	2017.07.24A_004 .d	GeminiC18 3x100 3(mm)
CCV 320-175631/3		07/24/2017 11:49	1		GeminiC18 3x100 3(mm)
ZZZZZ		07/24/2017 11:56	1		GeminiC18 3x100 3(mm)
ZZZZZ		07/24/2017 12:02	5		GeminiC18 3x100 3(mm)
ZZZZZ		07/24/2017 12:09	1		GeminiC18 3x100 3(mm)
ZZZZZ		07/24/2017 12:16	1		GeminiC18 3x100 3(mm)
CCV 320-175631/8		07/24/2017 12:23	1		GeminiC18 3x100 3(mm)

Lab Name: TestAmerica Sacramento Job No.: 320-29732-1

SDG No.:

Lab Sample ID: <u>CCVL 320-175631/2</u> Calibration Date: <u>07/24/2017 11:42</u>

Instrument ID: A8_N Calib Start Date: 07/23/2017 13:10

GC Column: GeminiC18 3×100 ID: 3.00 (mm) Calib End Date: 07/23/2017 13:58

Lab File ID: 2017.07.24A_004.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanoic acid (PFBA)	AveID	0.8820	0.9430		1.07	1.00	6.9	50.0
Perfluoropentanoic acid (PFPeA)	AveID	1.042	1.068		1.02	1.00	2.5	50.0
Perfluorobutanesulfonic acid (PFBS)	AveID	1.489	1.485		0.881	0.884	-0.3	50.0
Perfluorohexanoic acid (PFHxA)	AveID	0.9521	0.9823		1.03	1.00	3.2	50.0
Perfluoroheptanoic acid (PFHpA)	AveID	1.026	1.035		1.01	1.00	0.8	50.0
Perfluorohexanesulfonic acid (PFHxS)	AveID	1.082	1.177		0.990	0.910	8.8	50.0
6:2FTS	AveID	0.8958	1.066		1.13	0.948	19.0	50.0
Perfluorooctanoic acid (PFOA)	AveID	1.067	1.050		0.985	1.00	-1.5	50.0
Perfluoroheptanesulfonic Acid (PFHpS)	AveID	1.122	1.167		0.991	0.952	4.1	50.0
Perfluorononanoic acid (PFNA)	AveID	1.018	0.9560		0.939	1.00	-6.1	50.0
Perfluorooctanesulfonic acid (PFOS)	AveID	1.057	1.478		1.30	0.928	39.8	50.0
Perfluorooctane Sulfonamide (FOSA)	AveID	0.9018	0.9118		1.01	1.00	1.1	50.0
8:2FTS	AveID	0.9107	0.9012		0.948	0.958	-1.0	50.0
Perfluorodecanoic acid (PFDA)	AveID	0.9799	0.9261		0.945	1.00	-5.5	50.0
N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA)	AveID	0.9100	0.8950		0.984	1.00	-1.6	50.0
Perfluorodecanesulfonic acid (PFDS)	AveID	0.6225	0.6623		1.03	0.964	6.4	50.0
N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)	AveID	0.8488	0.7597		0.895	1.00	-10.5	50.0
Perfluoroundecanoic acid (PFUnA)	L2ID		1.159		1.02	1.00	2.4	50.0
MeFOSA	AveID	0.9183	0.9275		1.01	1.00	1.0	50.0
N-EtFOSA-M	AveID	0.9274	0.9449		1.02	1.00	1.9	50.0
Perfluorododecanoic acid (PFDoA)	AveID	0.9292	0.9052		0.974	1.00	-2.6	50.0
Perfluorotridecanoic Acid (PFTriA)	AveID	0.8514	0.9070		1.07	1.00	6.5	50.0
Perfluorotetradecanoic acid (PFTeA)	AveID	1.922	2.397		1.25	1.00	24.7	50.0
Perfluoro-n-hexadecanoic acid (PFHxDA)	L2ID		1.714		1.50	1.00	49.9	50.0
Perfluoro-n-octadecanoic acid (PFODA)	AveID	0.7652	0.8116		1.06	1.00	6.1	50.0
13C4 PFBA	Ave	156025	162534		52.1	50.0	4.2	50.0
13C5 PFPeA	Ave	110496	121488		55.0	50.0	9.9	50.0
13C2 PFHxA	Ave	101156	126892		62.7	50.0	25.4	50.0
13C4-PFHpA	Ave	83824	105586		63.0	50.0	26.0	50.0
1802 PFHxS	Ave	137438	151531		52.2	47.3	10.3	50.0
M2-6:2FTS	Ave	47560	55947		55.9	47.5	17.6	50.0

Lab Name: TestAmerica Sacramento Job No.: 320-29732-1

SDG No.:

Lab Sample ID: <u>CCVL 320-175631/2</u> Calibration Date: <u>07/24/2017 11:42</u>

Instrument ID: A8_N Calib Start Date: 07/23/2017 13:10

GC Column: GeminiC18 3×100 ID: 3.00 (mm) Calib End Date: 07/23/2017 13:58

Lab File ID: 2017.07.24A_004.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE CF	CF	MIN CF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
13C4 PFOA	Ave	82143	102277		62.3	50.0	24.5	50.0
13C4 PFOS	Ave	108200	114047		50.4	47.8	5.4	50.0
13C5 PFNA	Ave	65740	81651		62.1	50.0	24.2	50.0
13C8 FOSA	Ave	182802	190075		52.0	50.0	4.0	50.0
M2-8:2FTS	Ave	36500	50747		66.6	47.9	39.0	50.0
13C2 PFDA	Ave	55836	79839		71.5	50.0	43.0	50.0
d3-NMeFOSAA	Ave	21732	26929		62.0	50.0	23.9	50.0
d5-NEtFOSAA	Ave	21931	28325		64.6	50.0	29.2	50.0
13C2 PFUnA	Ave	40729	59002		72.4	50.0	44.9	50.0
d-N-MeFOSA-M	Ave	47115	47583		50.5	50.0	1.0	50.0
d-N-EtFOSA-M	Ave	48834	47900		49.0	50.0	-1.9	50.0
13C2 PFDoA	Ave	44655	55751		62.4	50.0	24.8	50.0
13C2-PFTeDA	Ave	81216	108030		66.5	50.0	33.0	50.0
13C2-PFHxDA	Ave	41307	56461		68.3	50.0	36.7	50.0

LCMS ANALYSIS RUN LOG

Lab Name: TestAmerica Sacramento	Job No.: 320-29732-1
SDG No.:	
Instrument ID: A8_N	Start Date: 07/24/2017 20:00
Analysis Batch Number: 175757	End Date: 07/24/2017 20:21

LAB SAMPLE ID	CLIENT SAMPLE ID	DATE ANALYZED	DILUTION FACTOR	LAB FILE ID	COLUMN ID
CCV 320-175757/1		07/24/2017 20:00	1	2017.07.24AA_02 8.d	GeminiC18 3x100 3(mm)
320-29732-1 DL		07/24/2017 20:07	10	2017.07.24AA_02 9.d	GeminiC18 3x100 3(mm)
320-29732-2		07/24/2017 20:14	1	2017.07.24AA_03 0.d	GeminiC18 3x100 3(mm)
CCV 320-175757/4		07/24/2017 20:21	1	2017.07.24AA_03 1.d	GeminiC18 3x100 3(mm)

Lab Name: TestAmerica Sacramento Job No.: 320-29732-1

SDG No.:

Lab Sample ID: CCV 320-175757/1 Calibration Date: 07/24/2017 20:00

Instrument ID: A8_N Calib Start Date: 07/23/2017 13:10

GC Column: GeminiC18 3×100 ID: 3.00 (mm) Calib End Date: 07/23/2017 13:58

Lab File ID: 2017.07.24AA_028.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanoic acid (PFBA)	AveID	0.8820	0.9374		53.1	50.0	6.3	25.0
Perfluoropentanoic acid (PFPeA)	AveID	1.042	0.9923		47.6	50.0	-4.8	25.0
Perfluorobutanesulfonic acid (PFBS)	AveID	1.489	1.511		44.9	44.2	1.5	25.0
Perfluorohexanoic acid (PFHxA)	AveID	0.9521	0.9065		47.6	50.0	-4.8	25.0
Perfluoroheptanoic acid (PFHpA)	AveID	1.026	0.9777		47.6	50.0	-4.7	25.0
Perfluorohexanesulfonic acid (PFHxS)	AveID	1.082	0.9858		41.5	45.5	-8.9	25.0
6:2FTS	AveID	0.8958	0.8518		45.1	47.4	-4.9	25.0
Perfluorooctanoic acid (PFOA)	AveID	1.067	0.9891		46.4	50.0	-7.3	25.0
Perfluoroheptanesulfonic Acid (PFHpS)	AveID	1.122	1.253		53.2	47.6	11.7	25.0
Perfluorononanoic acid (PFNA)	AveID	1.018	0.9508		46.7	50.0	-6.6	25.0
Perfluorooctanesulfonic acid (PFOS)	AveID	1.057	1.038		45.5	46.4	-1.9	25.0
8:2FTS	AveID	0.9107	0.8680		45.7	47.9	-4.7	25.0
Perfluorooctane Sulfonamide (FOSA)	AveID	0.9018	0.8948		49.6	50.0	-0.8	25.0
Perfluorodecanoic acid (PFDA)	AveID	0.9799	0.9289		47.4	50.0	-5.2	25.0
N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA)	AveID	0.9100	0.9241		50.8	50.0	1.5	25.0
Perfluorodecanesulfonic acid (PFDS)	AveID	0.6225	0.6731		52.1	48.2	8.1	25.0
N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)	AveID	0.8488	0.8254		48.6	50.0	-2.8	25.0
Perfluoroundecanoic acid (PFUnA)	L2ID		0.9616		46.8	50.0	-6.4	25.0
MeFOSA	AveID	0.9183	0.8895		48.4	50.0	-3.1	25.0
Perfluorododecanoic acid (PFDoA)	AveID	0.9292	0.8254		44.4	50.0	-11.2	25.0
N-EtFOSA-M	AveID	0.9274	0.9129		49.2	50.0	-1.6	25.0
Perfluorotridecanoic Acid (PFTriA)	AveID	0.8514	0.8610		50.6	50.0	1.1	25.0
Perfluorotetradecanoic acid (PFTeA)	AveID	1.922	1.879		48.9	50.0	-2.2	25.0
Perfluoro-n-hexadecanoic acid (PFHxDA)	L2ID		0.8600		53.7	50.0	7.3	25.0
Perfluoro-n-octadecanoic acid (PFODA)	AveID	0.7652	0.8788		57.4	50.0	14.8	25.0
13C4 PFBA	Ave	156025	161351		51.7	50.0	3.4	50.0
13C5 PFPeA	Ave	110496	114786		51.9	50.0	3.9	50.0
13C2 PFHxA	Ave	101156	109880		54.3	50.0	8.6	50.0
13C4-PFHpA	Ave	83824	91403		54.5	50.0	9.0	50.0
1802 PFHxS	Ave	137438	138032		47.5	47.3	0.4	50.0
M2-6:2FTS	Ave	47560	46183		46.1	47.5	-2.9	50.0

Lab Name: TestAmerica Sacramento Job No.: 320-29732-1

SDG No.:

Lab Sample ID: CCV 320-175757/1 Calibration Date: 07/24/2017 20:00

Instrument ID: A8_N Calib Start Date: 07/23/2017 13:10

GC Column: GeminiC18 3×100 ID: 3.00 (mm) Calib End Date: 07/23/2017 13:58

Lab File ID: 2017.07.24AA_028.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE CF	CF	MIN CF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
13C4 PFOA	Ave	82143	86191		52.5	50.0	4.9	50.0
13C4 PFOS	Ave	108200	96791		42.8	47.8	-10.5	50.0
13C5 PFNA	Ave	65740	66393		50.5	50.0	1.0	50.0
13C8 FOSA	Ave	182802	170266		46.6	50.0	-6.9	50.0
M2-8:2FTS	Ave	36500	32386		42.5	47.9	-11.3	50.0
13C2 PFDA	Ave	55836	54898		49.2	50.0	-1.7	50.0
d3-NMeFOSAA	Ave	21732	19126		44.0	50.0	-12.0	50.0
d5-NEtFOSAA	Ave	21931	21026		47.9	50.0	-4.1	50.0
13C2 PFUnA	Ave	40729	41702		51.2	50.0	2.4	50.0
d-N-MeFOSA-M	Ave	47115	45477		48.3	50.0	-3.5	50.0
13C2 PFDoA	Ave	44655	42599		47.7	50.0	-4.6	50.0
d-N-EtFOSA-M	Ave	48834	47505		48.6	50.0	-2.7	50.0
13C2-PFTeDA	Ave	81216	82254		50.6	50.0	1.3	50.0
13C2-PFHxDA	Ave	41307	44625		54.0	50.0	8.0	50.0

Lab Name: TestAmerica Sacramento Job No.: 320-29732-1

SDG No.:

Lab Sample ID: CCV 320-175757/4 Calibration Date: 07/24/2017 20:21

Instrument ID: A8_N Calib Start Date: 07/23/2017 13:10

GC Column: GeminiC18 3×100 ID: 3.00 (mm) Calib End Date: 07/23/2017 13:58

Lab File ID: 2017.07.24AA_031.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanoic acid (PFBA)	AveID	0.8820	0.9212		20.9	20.0	4.4	25.0
Perfluoropentanoic acid (PFPeA)	AveID	1.042	1.022		19.6	20.0	-1.9	25.0
Perfluorobutanesulfonic acid (PFBS)	AveID	1.489	1.608		19.1	17.7	8.0	25.0
Perfluorohexanoic acid (PFHxA)	AveID	0.9521	0.9205		19.3	20.0	-3.3	25.0
Perfluoroheptanoic acid (PFHpA)	AveID	1.026	1.002		19.5	20.0	-2.4	25.0
Perfluorohexanesulfonic acid (PFHxS)	AveID	1.082	1.012		17.0	18.2	-6.4	25.0
6:2FTS	AveID	0.8958	0.8829		18.7	19.0	-1.4	25.0
Perfluoroheptanesulfonic Acid (PFHpS)	AveID	1.122	1.262		21.4	19.0	12.5	25.0
Perfluorooctanoic acid (PFOA)	AveID	1.067	1.051		19.7	20.0	-1.5	25.0
Perfluorononanoic acid (PFNA)	AveID	1.018	0.9643		18.9	20.0	-5.3	25.0
Perfluorooctanesulfonic acid (PFOS)	AveID	1.057	1.065		18.7	18.6	0.8	25.0
8:2FTS	AveID	0.9107	0.9202		19.4	19.2	1.1	25.0
Perfluorooctane Sulfonamide (FOSA)	AveID	0.9018	0.9315		20.7	20.0	3.3	25.0
Perfluorodecanoic acid (PFDA)	AveID	0.9799	0.8900		18.2	20.0	-9.2	25.0
N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA)	AveID	0.9100	0.9110		20.0	20.0	0.1	25.0
Perfluorodecanesulfonic acid (PFDS)	AveID	0.6225	0.6850		21.2	19.3	10.1	25.0
N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)	AveID	0.8488	0.8562		20.2	20.0	0.9	25.0
Perfluoroundecanoic acid (PFUnA)	L2ID		1.076		20.9	20.0	4.4	25.0
MeFOSA	AveID	0.9183	0.8960		19.5	20.0	-2.4	25.0
Perfluorododecanoic acid (PFDoA)	AveID	0.9292	0.9904		21.3	20.0	6.6	25.0
N-EtFOSA-M	AveID	0.9274	0.9344		20.2	20.0	0.8	25.0
Perfluorotridecanoic Acid (PFTriA)	AveID	0.8514	1.037		24.4	20.0	21.8	25.0
Perfluorotetradecanoic acid (PFTeA)	AveID	1.922	2.390		24.9	20.0	24.3	25.0
Perfluoro-n-hexadecanoic acid (PFHxDA)	L2ID		1.217		30.1	20.0	50.4*	25.0
Perfluoro-n-octadecanoic acid (PFODA)	AveID	0.7652	1.104		28.8	20.0	44.2*	25.0
13C4 PFBA	Ave	156025	170093		54.5	50.0	9.0	50.0
13C5 PFPeA	Ave	110496	120405		54.5	50.0	9.0	50.0
13C2 PFHxA	Ave	101156	113025		55.9	50.0	11.7	50.0
13C4-PFHpA	Ave	83824	94663		56.5	50.0	12.9	50.0
1802 PFHxS	Ave	137438	138985		47.8	47.3	1.1	50.0
M2-6:2FTS	Ave	47560	45911		45.9	47.5	-3.5	50.0

Lab Name: TestAmerica Sacramento Job No.: 320-29732-1

SDG No.:

Lab Sample ID: CCV 320-175757/4 Calibration Date: 07/24/2017 20:21

Instrument ID: A8_N Calib Start Date: 07/23/2017 13:10

GC Column: GeminiC18 3×100 ID: 3.00 (mm) Calib End Date: 07/23/2017 13:58

Lab File ID: 2017.07.24AA_031.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE CF	CF	MIN CF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
13C4 PFOA	Ave	82143	88695		54.0	50.0	8.0	50.0
13C4 PFOS	Ave	108200	100104		44.2	47.8	-7.5	50.0
13C5 PFNA	Ave	65740	69492		52.9	50.0	5.7	50.0
13C8 FOSA	Ave	182802	177867		48.7	50.0	-2.7	50.0
M2-8:2FTS	Ave	36500	34924		45.8	47.9	-4.3	50.0
13C2 PFDA	Ave	55836	61632		55.2	50.0	10.4	50.0
d3-NMeFOSAA	Ave	21732	20578		47.3	50.0	-5.3	50.0
d5-NEtFOSAA	Ave	21931	21152		48.2	50.0	-3.6	50.0
13C2 PFUnA	Ave	40729	45507		55.9	50.0	11.7	50.0
d-N-MeFOSA-M	Ave	47115	45766		48.6	50.0	-2.9	50.0
13C2 PFDoA	Ave	44655	46012		51.5	50.0	3.0	50.0
d-N-EtFOSA-M	Ave	48834	47471		48.6	50.0	-2.8	50.0
13C2-PFTeDA	Ave	81216	109330		67.3	50.0	34.6	50.0
13C2-PFHxDA	Ave	41307	63303		76.6	50.0	53.3*	50.0

LCMS ANALYSIS RUN LOG

Lab Name: TestAmerica Sacramento	Job No.: <u>320-29732-1</u>
SDG No.:	
Instrument ID: A8_N	Start Date: 07/25/2017 09:27
Analysis Batch Number: 175762	End Date: 07/25/2017 10:02

LAB SAMPLE ID	CLIENT SAMPLE ID	DATE ANALYZED	DILUTION	LAB FILE ID	COLUMN ID
			FACTOR		
CCVL 320-175762/3		07/25/2017 09:27	1	2017.07.25A_003	GeminiC18 3x100 3(mm)
CCV 320-175762/4		07/25/2017 09:34	1		GeminiC18 3x100 3(mm)
ZZZZZ		07/25/2017 09:41	1		GeminiC18 3x100 3(mm)
ZZZZZ		07/25/2017 09:48	1		GeminiC18 3x100 3(mm)
ZZZZZ		07/25/2017 09:55	1		GeminiC18 3x100 3(mm)
CCV 320-175762/8		07/25/2017 10:02	1		GeminiC18 3x100 3(mm)

Lab Name: TestAmerica Sacramento Job No.: 320-29732-1

SDG No.:

Lab Sample ID: CCVL 320-175762/3 Calibration Date: 07/25/2017 09:27

Instrument ID: A8_N Calib Start Date: 07/23/2017 13:10

GC Column: GeminiC18 3×100 ID: 3.00 (mm) Calib End Date: 07/23/2017 13:58

Lab File ID: 2017.07.25A_003.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanoic acid (PFBA)	AveID	0.8820	0.9681		1.10	1.00	9.8	50.0
Perfluoropentanoic acid (PFPeA)	AveID	1.042	1.119		1.07	1.00	7.4	50.0
Perfluorobutanesulfonic acid (PFBS)	AveID	1.489	1.535		0.911	0.884	3.1	50.0
Perfluorohexanoic acid (PFHxA)	AveID	0.9521	0.9504		0.998	1.00	-0.2	50.0
Perfluoroheptanoic acid (PFHpA)	AveID	1.026	1.044		1.02	1.00	1.7	50.0
Perfluorohexanesulfonic acid (PFHxS)	AveID	1.082	1.224		1.03	0.910	13.1	50.0
6:2FTS	AveID	0.8958	0.996		1.05	0.948	11.1	50.0
Perfluorooctanoic acid (PFOA)	AveID	1.067	1.128		1.06	1.00	5.7	50.0
Perfluoroheptanesulfonic Acid (PFHpS)	AveID	1.122	1.116		0.947	0.952	-0.5	50.0
Perfluorononanoic acid (PFNA)	AveID	1.018	0.9433		0.926	1.00	-7.4	50.0
Perfluorooctanesulfonic acid (PFOS)	AveID	1.057	1.044		0.916	0.928	-1.3	50.0
Perfluorooctane Sulfonamide (FOSA)	AveID	0.9018	0.8915		0.989	1.00	-1.1	50.0
8:2FTS	AveID	0.9107	0.9455		0.995	0.958	3.8	50.0
Perfluorodecanoic acid (PFDA)	AveID	0.9799	0.9836		1.00	1.00	0.4	50.0
N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA)	AveID	0.9100	0.9190		1.01	1.00	1.0	50.0
Perfluorodecanesulfonic acid (PFDS)	AveID	0.6225	0.6370		0.986	0.964	2.3	50.0
N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)	AveID	0.8488	0.8198		0.966	1.00	-3.4	50.0
Perfluoroundecanoic acid (PFUnA)	L2ID		1.091		0.958	1.00	-4.2	50.0
MeFOSA	AveID	0.9183	0.8995		0.979	1.00	-2.1	50.0
N-EtFOSA-M	AveID	0.9274	0.8837		0.953	1.00	-4.7	50.0
Perfluorododecanoic acid (PFDoA)	AveID	0.9292	0.9726		1.05	1.00	4.7	50.0
Perfluorotridecanoic Acid (PFTriA)	AveID	0.8514	0.8843		1.04	1.00	3.9	50.0
Perfluorotetradecanoic acid (PFTeA)	AveID	1.922	2.498		1.30	1.00	30.0	50.0
Perfluoro-n-hexadecanoic acid (PFHxDA)	L2ID		1.554		1.30	1.00	29.7	50.0
Perfluoro-n-octadecanoic acid (PFODA)	AveID	0.7652	0.7522		0.983	1.00	-1.7	50.0
13C4 PFBA	Ave	156025	150441		48.2	50.0	-3.6	50.0
13C5 PFPeA	Ave	110496	112401		50.9	50.0	1.7	50.0
13C2 PFHxA	Ave	101156	104323		51.6	50.0	3.1	50.0
13C4-PFHpA	Ave	83824	89432		53.3	50.0	6.7	50.0
1802 PFHxS	Ave	137438	135009		46.5	47.3	-1.8	50.0
M2-6:2FTS	Ave	47560	42852		42.8	47.5	-9.9	50.0

Lab Name: TestAmerica Sacramento Job No.: 320-29732-1

SDG No.:

Lab Sample ID: CCVL 320-175762/3 Calibration Date: 07/25/2017 09:27

Instrument ID: <u>A8_N</u> Calib Start Date: 07/23/2017 13:10

GC Column: GeminiC18 3×100 ID: 3.00 (mm) Calib End Date: 07/23/2017 13:58

Lab File ID: 2017.07.25A_003.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE CF	CF	MIN CF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
13C4 PFOA	Ave	82143	88017		53.6	50.0	7.1	50.0
13C4 PFOS	Ave	108200	108099		47.8	47.8	-0.0	50.0
13C5 PFNA	Ave	65740	72808		55.4	50.0	10.8	50.0
13C8 FOSA	Ave	182802	181464		49.6	50.0	-0.7	50.0
M2-8:2FTS	Ave	36500	34031		44.7	47.9	-6.8	50.0
13C2 PFDA	Ave	55836	63109		56.5	50.0	13.0	50.0
d3-NMeFOSAA	Ave	21732	20921		48.1	50.0	-3.7	50.0
13C2 PFUnA	Ave	40729	46713		57.3	50.0	14.7	50.0
d5-NEtFOSAA	Ave	21931	22474		51.2	50.0	2.5	50.0
d-N-MeFOSA-M	Ave	47115	44961		47.7	50.0	-4.6	50.0
d-N-EtFOSA-M	Ave	48834	45113		46.2	50.0	-7.6	50.0
13C2 PFDoA	Ave	44655	46192		51.7	50.0	3.4	50.0
13C2-PFTeDA	Ave	81216	88642		54.6	50.0	9.1	50.0
13C2-PFHxDA	Ave	41307	43303		52.4	50.0	4.8	50.0

LCMS ANALYSIS RUN LOG

Lab Name: TestAmerica Sacramento	Job No.: 320-29732-1
SDG No.:	
Instrument ID: A8_N	Start Date: 07/25/2017 14:10
Analysis Batch Number: 175951	End Date: 07/25/2017 17:10

LAB SAMPLE ID	CLIENT SAMPLE ID	DATE ANALYZED	DILUTION	LAB FILE ID	COLUMN ID
			FACTOR		
CCV 320-175951/1		07/25/2017 14:10	1	2017.07.25B_001 .d	GeminiC18 3x100 3(mm)
MB 320-175074/1-A		07/25/2017 14:17	1	2017.07.25B_002 .d	GeminiC18 3x100 3(mm)
LCS 320-175074/2-A		07/25/2017 14:24	1	2017.07.25B_003 .d	GeminiC18 3x100 3(mm)
LCSD 320-175074/3-A		07/25/2017 14:31	1	2017.07.25B_004 .d	GeminiC18 3x100 3(mm)
320-29732-1 RE		07/25/2017 15:05	1	2017.07.25B_009 .d	GeminiC18 3x100 3(mm)
320-29732-2 RE		07/25/2017 15:12	1	2017.07.25B_010 .d	GeminiC18 3x100 3(mm)
320-29732-3 RE		07/25/2017 15:19	1	2017.07.25B_011 .d	GeminiC18 3x100 3(mm)
CCV 320-175951/12		07/25/2017 15:26	1	2017.07.25B_012 .d	GeminiC18 3x100 3(mm)
CCV 320-175951/23		07/25/2017 16:42	1		GeminiC18 3x100 3(mm)
CCV 320-175951/27		07/25/2017 17:10	1		GeminiC18 3x100 3(mm)

Lab Name: TestAmerica Sacramento Job No.: 320-29732-1

SDG No.:

Lab Sample ID: CCV 320-175951/1 Calibration Date: 07/25/2017 14:10

Instrument ID: A8_N Calib Start Date: 07/23/2017 13:10

GC Column: GeminiC18 3×100 ID: 3.00 (mm) Calib End Date: 07/23/2017 13:58

Lab File ID: 2017.07.25B_001.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanoic acid (PFBA)	AveID	0.8820	1.032		23.4	20.0	17.0	25.0
Perfluoropentanoic acid (PFPeA)	AveID	1.042	1.052		20.2	20.0	1.0	25.0
Perfluorobutanesulfonic acid (PFBS)	AveID	1.489	1.537		18.2	17.7	3.2	25.0
Perfluorohexanoic acid (PFHxA)	AveID	0.9521	0.9547		20.1	20.0	0.3	25.0
Perfluoroheptanoic acid (PFHpA)	AveID	1.026	1.005		19.6	20.0	-2.1	25.0
Perfluorohexanesulfonic acid (PFHxS)	AveID	1.082	1.021		17.2	18.2	-5.6	25.0
6:2FTS	AveID	0.8958	0.8787		18.6	19.0	-1.9	25.0
Perfluorooctanoic acid (PFOA)	AveID	1.067	1.024		19.2	20.0	-4.0	25.0
Perfluoroheptanesulfonic Acid (PFHpS)	AveID	1.122	1.189		20.2	19.0	6.0	25.0
Perfluorononanoic acid (PFNA)	AveID	1.018	0.9903		19.5	20.0	-2.7	25.0
Perfluorooctanesulfonic acid (PFOS)	AveID	1.057	1.070		18.8	18.6	1.2	25.0
8:2FTS	AveID	0.9107	0.9275		19.5	19.2	1.9	25.0
Perfluorooctane Sulfonamide (FOSA)	AveID	0.9018	0.9007		20.0	20.0	-0.1	25.0
Perfluorodecanoic acid (PFDA)	AveID	0.9799	0.9232		18.8	20.0	-5.8	25.0
N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA)	AveID	0.9100	0.8955		19.7	20.0	-1.6	25.0
Perfluorodecanesulfonic acid (PFDS)	AveID	0.6225	0.6495		20.1	19.3	4.3	25.0
N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)	AveID	0.8488	0.8798		20.7	20.0	3.7	25.0
Perfluoroundecanoic acid (PFUnA)	L2ID		1.027		19.9	20.0	-0.4	25.0
MeFOSA	AveID	0.9183	0.9266		20.2	20.0	0.9	25.0
Perfluorododecanoic acid (PFDoA)	AveID	0.9292	0.9665		20.8	20.0	4.0	25.0
N-EtFOSA-M	AveID	0.9274	0.9108		19.6	20.0	-1.8	25.0
Perfluorotridecanoic Acid (PFTriA)	AveID	0.8514	0.8304		19.5	20.0	-2.5	25.0
Perfluorotetradecanoic acid (PFTeA)	AveID	1.922	2.048		21.3	20.0	6.6	25.0
Perfluoro-n-hexadecanoic acid (PFHxDA)	L2ID		0.9091		22.3	20.0	11.5	25.0
Perfluoro-n-octadecanoic acid (PFODA)	AveID	0.7652	0.8119		21.2	20.0	6.1	25.0
13C4 PFBA	Ave	156025	160885		51.6	50.0	3.1	50.0
13C5 PFPeA	Ave	110496	115508		52.3	50.0	4.5	50.0
13C2 PFHxA	Ave	101156	110279		54.5	50.0	9.0	50.0
13C4-PFHpA	Ave	83824	97166		58.0	50.0	15.9	50.0
1802 PFHxS	Ave	137438	149216		51.4	47.3	8.6	50.0
M2-6:2FTS	Ave	47560	45868		45.8	47.5	-3.6	50.0

Lab Name: TestAmerica Sacramento Job No.: 320-29732-1

SDG No.:

Lab Sample ID: <u>CCV 320-175951/1</u> Calibration Date: <u>07/25/2017 14:10</u>

Instrument ID: <u>A8_N</u> Calib Start Date: 07/23/2017 13:10

GC Column: GeminiC18 3×100 ID: 3.00 (mm) Calib End Date: 07/23/2017 13:58

Lab File ID: 2017.07.25B_001.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE CF	CF	MIN CF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
13C4 PFOA	Ave	82143	91461		55.7	50.0	11.3	50.0
13C4 PFOS	Ave	108200	108341		47.9	47.8	0.1	50.0
13C5 PFNA	Ave	65740	71588		54.4	50.0	8.9	50.0
M2-8:2FTS	Ave	36500	34518		45.3	47.9	-5.4	50.0
13C8 FOSA	Ave	182802	184132		50.4	50.0	0.7	50.0
13C2 PFDA	Ave	55836	61094		54.7	50.0	9.4	50.0
d3-NMeFOSAA	Ave	21732	21835		50.2	50.0	0.5	50.0
13C2 PFUnA	Ave	40729	45084		55.3	50.0	10.7	50.0
d5-NEtFOSAA	Ave	21931	22089		50.4	50.0	0.7	50.0
d-N-MeFOSA-M	Ave	47115	45309		48.1	50.0	-3.8	50.0
13C2 PFDoA	Ave	44655	44365		49.7	50.0	-0.6	50.0
d-N-EtFOSA-M	Ave	48834	46316		47.4	50.0	-5.2	50.0
13C2-PFTeDA	Ave	81216	87004		53.6	50.0	7.1	50.0
13C2-PFHxDA	Ave	41307	44771		54.2	50.0	8.4	50.0

Lab Name: TestAmerica Sacramento Job No.: 320-29732-1

SDG No.:

Lab Sample ID: CCV 320-175951/12 Calibration Date: 07/25/2017 15:26

Instrument ID: A8_N Calib Start Date: 07/23/2017 13:10

GC Column: GeminiC18 3×100 ID: 3.00 (mm) Calib End Date: 07/23/2017 13:58

Lab File ID: 2017.07.25B_012.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanoic acid (PFBA)	AveID	0.8820	0.9454		53.6	50.0	7.2	25.0
Perfluoropentanoic acid (PFPeA)	AveID	1.042	1.023		49.1	50.0	-1.9	25.0
Perfluorobutanesulfonic acid (PFBS)	AveID	1.489	1.488		44.2	44.2	-0.0	25.0
Perfluorohexanoic acid (PFHxA)	AveID	0.9521	0.8958		47.0	50.0	-5.9	25.0
Perfluoroheptanoic acid (PFHpA)	AveID	1.026	0.9784		47.7	50.0	-4.7	25.0
Perfluorohexanesulfonic acid (PFHxS)	AveID	1.082	1.006		42.3	45.5	-7.1	25.0
6:2FTS	AveID	0.8958	0.8577		45.4	47.4	-4.3	25.0
Perfluorooctanoic acid (PFOA)	AveID	1.067	1.011		47.4	50.0	-5.2	25.0
Perfluoroheptanesulfonic Acid (PFHpS)	AveID	1.122	1.165		49.5	47.6	3.9	25.0
Perfluorooctanesulfonic acid (PFOS)	AveID	1.057	1.032		45.3	46.4	-2.4	25.0
Perfluorononanoic acid (PFNA)	AveID	1.018	0.9003		44.2	50.0	-11.6	25.0
8:2FTS	AveID	0.9107	0.8913		46.9	47.9	-2.1	25.0
Perfluorodecanoic acid (PFDA)	AveID	0.9799	0.9503		48.5	50.0	-3.0	25.0
Perfluorooctane Sulfonamide (FOSA)	AveID	0.9018	0.9013		50.0	50.0	-0.0	25.0
N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA)	AveID	0.9100	0.9250		50.8	50.0	1.7	25.0
Perfluorodecanesulfonic acid (PFDS)	AveID	0.6225	0.6416		49.7	48.2	3.1	25.0
N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)	AveID	0.8488	0.8372		49.3	50.0	-1.4	25.0
Perfluoroundecanoic acid (PFUnA)	L2ID		1.009		49.1	50.0	-1.8	25.0
MeFOSA	AveID	0.9183	0.8728		47.5	50.0	-5.0	25.0
Perfluorododecanoic acid (PFDoA)	AveID	0.9292	0.8897		47.9	50.0	-4.2	25.0
N-EtFOSA-M	AveID	0.9274	0.9226		49.7	50.0	-0.5	25.0
Perfluorotridecanoic Acid (PFTriA)	AveID	0.8514	0.8932		52.5	50.0	4.9	25.0
Perfluorotetradecanoic acid (PFTeA)	AveID	1.922	2.028		52.8	50.0	5.5	25.0
Perfluoro-n-hexadecanoic acid (PFHxDA)	L2ID		0.8189		51.1	50.0	2.1	25.0
Perfluoro-n-octadecanoic acid (PFODA)	AveID	0.7652	0.8205		53.6	50.0	7.2	25.0
13C4 PFBA	Ave	156025	157364		50.4	50.0	0.9	50.0
13C5 PFPeA	Ave	110496	114276		51.7	50.0	3.4	50.0
13C2 PFHxA	Ave	101156	112682		55.7	50.0	11.4	50.0
13C4-PFHpA	Ave	83824	94165		56.2	50.0	12.3	50.0
1802 PFHxS	Ave	137438	148491		51.1	47.3	8.0	50.0
M2-6:2FTS	Ave	47560	45465		45.4	47.5	-4.4	50.0

Lab Name: TestAmerica Sacramento Job No.: 320-29732-1

SDG No.:

Lab Sample ID: CCV 320-175951/12 Calibration Date: 07/25/2017 15:26

Instrument ID: A8_N Calib Start Date: 07/23/2017 13:10

GC Column: GeminiC18 3×100 ID: 3.00 (mm) Calib End Date: 07/23/2017 13:58

Lab File ID: 2017.07.25B_012.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE CF	CF	MIN CF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
13C4 PFOA	Ave	82143	89959		54.8	50.0	9.5	50.0
13C4 PFOS	Ave	108200	108150		47.8	47.8	-0.0	50.0
13C5 PFNA	Ave	65740	71522		54.4	50.0	8.8	50.0
13C8 FOSA	Ave	182802	175839		48.1	50.0	-3.8	50.0
M2-8:2FTS	Ave	36500	33302		43.7	47.9	-8.8	50.0
13C2 PFDA	Ave	55836	58717		52.6	50.0	5.2	50.0
d3-NMeFOSAA	Ave	21732	22198		51.1	50.0	2.1	50.0
13C2 PFUnA	Ave	40729	41652		51.1	50.0	2.3	50.0
d5-NEtFOSAA	Ave	21931	22002		50.2	50.0	0.3	50.0
d-N-MeFOSA-M	Ave	47115	47250		50.1	50.0	0.3	50.0
13C2 PFDoA	Ave	44655	42658		47.8	50.0	-4.5	50.0
d-N-EtFOSA-M	Ave	48834	49222		50.4	50.0	0.8	50.0
13C2-PFTeDA	Ave	81216	82053		50.5	50.0	1.0	50.0
13C2-PFHxDA	Ave	41307	43236		52.3	50.0	4.7	50.0

LCMS ANALYSIS RUN LOG

Lab Name: TestAmerica Sacramento	Job No.: 320-29732-1	
SDG No.:		
Instrument ID: A8_N	Start Date: 07/27/2017 12:19	
Analysis Batch Number: 176352	End Date: 07/27/2017 13:28	

LAB SAMPLE ID	CLIENT SAMPLE ID	DATE ANALYZED	DILUTION FACTOR	LAB FILE ID	COLUMN ID
CCVL 320-176352/3		07/27/2017 12:19	1	2017.07.27A_004	GeminiC18 3x100 3 (mm)
CCV 320-176352/4		07/27/2017 12:26	1		GeminiC18 3x100 3(mm)
ZZZZZ		07/27/2017 12:33	1		GeminiC18 3x100 3(mm)
ZZZZZ		07/27/2017 12:40	1		GeminiC18 3x100 3(mm)
ZZZZZ		07/27/2017 12:47	10		GeminiC18 3x100 3(mm)
ZZZZZ		07/27/2017 12:54	10		GeminiC18 3x100 3(mm)
ZZZZZ		07/27/2017 13:01	10		GeminiC18 3x100 3(mm)
ZZZZZ		07/27/2017 13:08	10		GeminiC18 3x100 3(mm)
ZZZZZ		07/27/2017 13:14	20		GeminiC18 3x100 3(mm)
ZZZZZ		07/27/2017 13:21	10		GeminiC18 3x100 3(mm)
CCV 320-176352/13		07/27/2017 13:28	1		GeminiC18 3x100 3(mm)

Lab Name: TestAmerica Sacramento Job No.: 320-29732-1

SDG No.:

Lab Sample ID: <u>CCVL 320-176352/3</u> Calibration Date: <u>07/27/2017 12:19</u>

Instrument ID: A8_N Calib Start Date: 07/23/2017 13:10

GC Column: GeminiC18 3×100 ID: 3.00 (mm) Calib End Date: 07/23/2017 13:58

Lab File ID: 2017.07.27A_004.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanoic acid (PFBA)	AveID	0.8820	0.9189		1.04	1.00	4.2	50.0
Perfluoropentanoic acid (PFPeA)	AveID	1.042	0.9866		0.947	1.00	-5.3	50.0
Perfluorobutanesulfonic acid (PFBS)	AveID	1.489	1.471		0.873	0.884	-1.2	50.0
Perfluorohexanoic acid (PFHxA)	AveID	0.9521	0.9061		0.952	1.00	-4.8	50.0
Perfluoroheptanoic acid (PFHpA)	AveID	1.026	1.076		1.05	1.00	4.8	50.0
Perfluorohexanesulfonic acid (PFHxS)	AveID	1.082	1.140		0.959	0.910	5.3	50.0
6:2FTS	AveID	0.8958	1.019		1.08	0.948	13.8	50.0
Perfluorooctanoic acid (PFOA)	AveID	1.067	1.047		0.982	1.00	-1.8	50.0
Perfluoroheptanesulfonic Acid (PFHpS)	AveID	1.122	1.088		0.924	0.952	-3.0	50.0
Perfluorooctanesulfonic acid (PFOS)	AveID	1.057	1.018		0.893	0.928	-3.7	50.0
Perfluorononanoic acid (PFNA)	AveID	1.018	0.9695		0.952	1.00	-4.8	50.0
Perfluorooctane Sulfonamide (FOSA)	AveID	0.9018	0.8899		0.987	1.00	-1.3	50.0
8:2FTS	AveID	0.9107	0.9055		0.953	0.958	-0.6	50.0
Perfluorodecanoic acid (PFDA)	AveID	0.9799	0.9303		0.949	1.00	-5.1	50.0
N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA)	AveID	0.9100	0.9218		1.01	1.00	1.3	50.0
Perfluorodecanesulfonic acid (PFDS)	AveID	0.6225	0.6379		0.988	0.964	2.5	50.0
N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)	AveID	0.8488	0.9035		1.06	1.00	6.4	50.0
Perfluoroundecanoic acid (PFUnA)	L2ID		1.106		0.973	1.00	-2.7	50.0
MeFOSA	AveID	0.9183	0.8647		0.942	1.00	-5.8	50.0
N-EtFOSA-M	AveID	0.9274	0.9072		0.978	1.00	-2.2	50.0
Perfluorododecanoic acid (PFDoA)	AveID	0.9292	0.9660		1.04	1.00	4.0	50.0
Perfluorotridecanoic Acid (PFTriA)	AveID	0.8514	0.8133		0.955	1.00	-4.5	50.0
Perfluorotetradecanoic acid (PFTeA)	AveID	1.922	2.181		1.13	1.00	13.5	50.0
Perfluoro-n-hexadecanoic acid (PFHxDA)	L2ID		1.541		1.28	1.00	28.0	50.0
Perfluoro-n-octadecanoic acid (PFODA)	AveID	0.7652	0.8208		1.07	1.00	7.3	50.0
13C4 PFBA	Ave	156025	173504		55.6	50.0	11.2	50.0
13C5 PFPeA	Ave	110496	132018		59.7	50.0	19.5	50.0
13C2 PFHxA	Ave	101156	122309		60.5	50.0	20.9	50.0
13C4-PFHpA	Ave	83824	102447		61.1	50.0	22.2	50.0
1802 PFHxS	Ave	137438	164725		56.7	47.3	19.9	50.0
M2-6:2FTS	Ave	47560	52803		52.7	47.5	11.0	50.0

Lab Name: TestAmerica Sacramento Job No.: 320-29732-1

SDG No.:

Lab Sample ID: <u>CCVL 320-176352/3</u> Calibration Date: <u>07/27/2017 12:19</u>

Instrument ID: A8_N Calib Start Date: 07/23/2017 13:10

GC Column: GeminiC18 3×100 ID: 3.00 (mm) Calib End Date: 07/23/2017 13:58

Lab File ID: 2017.07.27A_004.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE CF	CF	MIN CF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
13C4 PFOA	Ave	82143	103057		62.7	50.0	25.5	50.0
13C4 PFOS	Ave	108200	128541		56.8	47.8	18.8	50.0
13C5 PFNA	Ave	65740	83946		63.8	50.0	27.7	50.0
13C8 FOSA	Ave	182802	204146		55.8	50.0	11.7	50.0
M2-8:2FTS	Ave	36500	39801		52.2	47.9	9.0	50.0
13C2 PFDA	Ave	55836	71465		64.0	50.0	28.0	50.0
d3-NMeFOSAA	Ave	21732	26356		60.6	50.0	21.3	50.0
13C2 PFUnA	Ave	40729	53492		65.7	50.0	31.3	50.0
d5-NEtFOSAA	Ave	21931	27109		61.8	50.0	23.6	50.0
d-N-MeFOSA-M	Ave	47115	49445		52.5	50.0	4.9	50.0
d-N-EtFOSA-M	Ave	48834	50845		52.1	50.0	4.1	50.0
13C2 PFDoA	Ave	44655	53658		60.1	50.0	20.2	50.0
13C2-PFTeDA	Ave	81216	100679		62.0	50.0	24.0	50.0
13C2-PFHxDA	Ave	41307	51220		62.0	50.0	24.0	50.0

LCMS ANALYSIS RUN LOG

Lab Name: <u>TestAmerica Sacrame</u>	nto Job No.: 320-29732-1
SDG No.:	
Instrument ID: A8_N	Start Date: 07/27/2017 20:48
Analysis Batch Number: 176487	End Date: 07/27/2017 22:25

LAB SAMPLE ID	CLIENT SAMPLE ID	DATE ANALYZED	DILUTION FACTOR	LAB FILE ID	COLUMN ID
CCV 320-176487/1		07/27/2017 20:48	1	2017.07.27C_001 .d	GeminiC18 3x100 3(mm)
MB 320-175742/1-A		07/27/2017 20:55	1	2017.07.27C_002 .d	GeminiC18 3x100 3(mm)
LCS 320-175742/2-A		07/27/2017 21:02	1	2017.07.27C_003 .d	GeminiC18 3x100 3(mm)
LCSD 320-175742/3-A		07/27/2017 21:09	1	2017.07.27C_004 .d	GeminiC18 3x100 3(mm)
CCV 320-176487/12		07/27/2017 22:04	1	2017.07.27C_012 .d	GeminiC18 3x100 3(mm)
320-29732-4 RE		07/27/2017 22:18	1	2017.07.27C_014 .d	GeminiC18 3x100 3(mm)
CCV 320-176487/15		07/27/2017 22:25	1	2017.07.27C_015 .d	GeminiC18 3x100 3(mm)

Lab Name: TestAmerica Sacramento Job No.: 320-29732-1

SDG No.:

Lab Sample ID: CCV 320-176487/1 Calibration Date: 07/27/2017 20:48

Instrument ID: A8 N Calib Start Date: 07/23/2017 13:10

GC Column: GeminiC18 3×100 ID: 3.00 (mm) Calib End Date: 07/23/2017 13:58

Lab File ID: 2017.07.27C_001.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanoic acid (PFBA)	AveID	0.8820	0.9633		21.8	20.0	9.2	25.0
Perfluoropentanoic acid (PFPeA)	AveID	1.042	1.025		19.7	20.0	-1.7	25.0
Perfluorobutanesulfonic acid (PFBS)	AveID	1.489	1.421		16.9	17.7	-4.6	25.0
Perfluorohexanoic acid (PFHxA)	AveID	0.9521	0.9720		20.4	20.0	2.1	25.0
Perfluoroheptanoic acid (PFHpA)	AveID	1.026	0.9761		19.0	20.0	-4.9	25.0
Perfluorohexanesulfonic acid (PFHxS)	AveID	1.082	0.9763		16.4	18.2	-9.8	25.0
6:2FTS	AveID	0.8958	0.9075		19.2	19.0	1.3	25.0
Perfluorooctanoic acid (PFOA)	AveID	1.067	1.037		19.4	20.0	-2.8	25.0
Perfluoroheptanesulfonic Acid (PFHpS)	AveID	1.122	1.228		20.8	19.0	9.5	25.0
Perfluorononanoic acid (PFNA)	AveID	1.018	1.000		19.6	20.0	-1.8	25.0
Perfluorooctanesulfonic acid (PFOS)	AveID	1.057	1.113		19.5	18.6	5.3	25.0
8:2FTS	AveID	0.9107	0.9620		20.2	19.2	5.6	25.0
Perfluorooctane Sulfonamide (FOSA)	AveID	0.9018	0.9208		20.4	20.0	2.1	25.0
Perfluorodecanoic acid (PFDA)	AveID	0.9799	0.8767		17.9	20.0	-10.5	25.0
N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA)	AveID	0.9100	0.9031		19.8	20.0	-0.8	25.0
Perfluorodecanesulfonic acid (PFDS)	AveID	0.6225	0.6695		20.7	19.3	7.6	25.0
N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)	AveID	0.8488	0.8705		20.5	20.0	2.5	25.0
Perfluoroundecanoic acid (PFUnA)	L2ID		1.032		20.0	20.0	0.1	25.0
MeFOSA	AveID	0.9183	0.9222		20.1	20.0	0.4	25.0
Perfluorododecanoic acid (PFDoA)	AveID	0.9292	0.9201		19.8	20.0	-1.0	25.0
N-EtFOSA-M	AveID	0.9274	0.9040		19.5	20.0	-2.5	25.0
Perfluorotridecanoic Acid (PFTriA)	AveID	0.8514	0.8849		20.8	20.0	3.9	25.0
Perfluorotetradecanoic acid (PFTeA)	AveID	1.922	1.856	<u> </u>	19.3	20.0	-3.4	25.0
Perfluoro-n-hexadecanoic acid (PFHxDA)	L2ID		0.9791		24.1	20.0	20.3	25.0
Perfluoro-n-octadecanoic acid (PFODA)	AveID	0.7652	1.044		27.3	20.0	36.5*	25.0
13C4 PFBA	Ave	156025	189627		60.8	50.0	21.5	50.0
13C5 PFPeA	Ave	110496	137705		62.3	50.0	24.6	50.0
13C2 PFHxA	Ave	101156	125658		62.1	50.0	24.2	50.0
13C4-PFHpA	Ave	83824	111136		66.3	50.0	32.6	50.0
1802 PFHxS	Ave	137438	161465		55.6	47.3	17.5	50.0
M2-6:2FTS	Ave	47560	62339		62.3	47.5	31.1	50.0

Lab Name: TestAmerica Sacramento Job No.: 320-29732-1

SDG No.:

Lab Sample ID: <u>CCV 320-176487/1</u> Calibration Date: <u>07/27/2017 20:48</u>

Instrument ID: A8_N Calib Start Date: 07/23/2017 13:10

GC Column: GeminiC18 3×100 ID: 3.00 (mm) Calib End Date: 07/23/2017 13:58

Lab File ID: 2017.07.27C_001.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE CF	CF	MIN CF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
13C4 PFOA	Ave	82143	102008		62.1	50.0	24.2	50.0
13C4 PFOS	Ave	108200	110913		49.0	47.8	2.5	50.0
13C5 PFNA	Ave	65740	78128		59.4	50.0	18.8	50.0
13C8 FOSA	Ave	182802	193177		52.8	50.0	5.7	50.0
M2-8:2FTS	Ave	36500	48887		64.2	47.9	33.9	50.0
13C2 PFDA	Ave	55836	72114		64.6	50.0	29.2	50.0
d3-NMeFOSAA	Ave	21732	25607		58.9	50.0	17.8	50.0
d5-NEtFOSAA	Ave	21931	25970		59.2	50.0	18.4	50.0
13C2 PFUnA	Ave	40729	49147		60.3	50.0	20.7	50.0
d-N-MeFOSA-M	Ave	47115	48915		51.9	50.0	3.8	50.0
13C2 PFDoA	Ave	44655	50771		56.8	50.0	13.7	50.0
d-N-EtFOSA-M	Ave	48834	52382		53.6	50.0	7.3	50.0
13C2-PFTeDA	Ave	81216	90271		55.6	50.0	11.1	50.0
13C2-PFHxDA	Ave	41307	56162		68.0	50.0	36.0	50.0

Lab Name: TestAmerica Sacramento Job No.: 320-29732-1

SDG No.:

Lab Sample ID: CCV 320-176487/12 Calibration Date: 07/27/2017 22:04

Instrument ID: A8_N Calib Start Date: 07/23/2017 13:10

GC Column: GeminiC18 3×100 ID: 3.00 (mm) Calib End Date: 07/23/2017 13:58

Lab File ID: 2017.07.27C_012.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanoic acid (PFBA)	AveID	0.8820	0.9072		51.4	50.0	2.9	25.0
Perfluoropentanoic acid (PFPeA)	AveID	1.042	0.9625		46.2	50.0	-7.6	25.0
Perfluorobutanesulfonic acid (PFBS)	AveID	1.489	1.409		41.8	44.2	-5.4	25.0
Perfluorohexanoic acid (PFHxA)	AveID	0.9521	0.9321		48.9	50.0	-2.1	25.0
Perfluoroheptanoic acid (PFHpA)	AveID	1.026	0.9586		46.7	50.0	-6.6	25.0
Perfluorohexanesulfonic acid (PFHxS)	AveID	1.082	0.9797		41.2	45.5	-9.4	25.0
6:2FTS	AveID	0.8958	0.8372		44.3	47.4	-6.5	25.0
Perfluorooctanoic acid (PFOA)	AveID	1.067	1.047		49.1	50.0	-1.8	25.0
Perfluoroheptanesulfonic Acid (PFHpS)	AveID	1.122	1.132		48.0	47.6	0.9	25.0
Perfluorononanoic acid (PFNA)	AveID	1.018	0.996		48.9	50.0	-2.2	25.0
Perfluorooctanesulfonic acid (PFOS)	AveID	1.057	0.9886		43.4	46.4	-6.5	25.0
8:2FTS	AveID	0.9107	0.8990		47.3	47.9	-1.3	25.0
Perfluorooctane Sulfonamide (FOSA)	AveID	0.9018	0.8953		49.6	50.0	-0.7	25.0
Perfluorodecanoic acid (PFDA)	AveID	0.9799	0.8951		45.7	50.0	-8.6	25.0
N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA)	AveID	0.9100	0.8872		48.7	50.0	-2.5	25.0
Perfluorodecanesulfonic acid (PFDS)	AveID	0.6225	0.6080		47.1	48.2	-2.3	25.0
N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)	AveID	0.8488	0.8020		47.2	50.0	-5.5	25.0
Perfluoroundecanoic acid (PFUnA)	L2ID		0.9802		47.7	50.0	-4.6	25.0
MeFOSA	AveID	0.9183	0.8862		48.2	50.0	-3.5	25.0
Perfluorododecanoic acid (PFDoA)	AveID	0.9292	0.9512		51.2	50.0	2.4	25.0
N-EtFOSA-M	AveID	0.9274	0.9042		48.8	50.0	-2.5	25.0
Perfluorotridecanoic Acid (PFTriA)	AveID	0.8514	0.9157		53.8	50.0	7.6	25.0
Perfluorotetradecanoic acid (PFTeA)	AveID	1.922	1.898		49.4	50.0	-1.2	25.0
Perfluoro-n-hexadecanoic acid (PFHxDA)	L2ID		0.999		62.4	50.0	24.8	25.0
Perfluoro-n-octadecanoic acid (PFODA)	AveID	0.7652	1.014		66.3	50.0	32.5*	25.0
13C4 PFBA	Ave	156025	179234		57.4	50.0	14.9	50.0
13C5 PFPeA	Ave	110496	135283		61.2	50.0	22.4	50.0
13C2 PFHxA	Ave	101156	120814		59.7	50.0	19.4	50.0
13C4-PFHpA	Ave	83824	111594		66.6	50.0	33.1	50.0
1802 PFHxS	Ave	137438	160556		55.3	47.3	16.8	50.0
M2-6:2FTS	Ave	47560	57534		57.5	47.5	21.0	50.0

Lab Name: TestAmerica Sacramento Job No.: 320-29732-1

SDG No.:

Lab Sample ID: CCV 320-176487/12 Calibration Date: 07/27/2017 22:04

Instrument ID: A8_N Calib Start Date: 07/23/2017 13:10

GC Column: GeminiC18 3x100 ID: 3.00 (mm) Calib End Date: 07/23/2017 13:58

Lab File ID: 2017.07.27C_012.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE CF	CF	MIN CF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
13C4 PFOA	Ave	82143	97244		59.2	50.0	18.4	50.0
13C4 PFOS	Ave	108200	118951		52.5	47.8	9.9	50.0
13C5 PFNA	Ave	65740	73728		56.1	50.0	12.2	50.0
13C8 FOSA	Ave	182802	193888		53.0	50.0	6.1	50.0
M2-8:2FTS	Ave	36500	41121		54.0	47.9	12.7	50.0
13C2 PFDA	Ave	55836	68227		61.1	50.0	22.2	50.0
d3-NMeFOSAA	Ave	21732	24675		56.8	50.0	13.5	50.0
d5-NEtFOSAA	Ave	21931	26593		60.6	50.0	21.3	50.0
13C2 PFUnA	Ave	40729	47865		58.8	50.0	17.5	50.0
d-N-MeFOSA-M	Ave	47115	50676		53.8	50.0	7.6	50.0
13C2 PFDoA	Ave	44655	43800		49.0	50.0	-1.9	50.0
d-N-EtFOSA-M	Ave	48834	52177		53.4	50.0	6.8	50.0
13C2-PFTeDA	Ave	81216	87657		54.0	50.0	7.9	50.0
13C2-PFHxDA	Ave	41307	47512		57.5	50.0	15.0	50.0

Lab Name: TestAmerica Sacramento Job No.: 320-29732-1

SDG No.:

Lab Sample ID: <u>CCV 320-176487/15</u> Calibration Date: <u>07/27/2017 22:25</u>

Instrument ID: A8_N Calib Start Date: 07/23/2017 13:10

GC Column: GeminiC18 3×100 ID: 3.00 (mm) Calib End Date: 07/23/2017 13:58

Lab File ID: 2017.07.27C_015.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanoic acid (PFBA)	AveID	0.8820	0.9649		21.9	20.0	9.4	25.0
Perfluoropentanoic acid (PFPeA)	AveID	1.042	1.041		20.0	20.0	-0.1	25.0
Perfluorobutanesulfonic acid (PFBS)	AveID	1.489	1.545		18.3	17.7	3.7	25.0
Perfluorohexanoic acid (PFHxA)	AveID	0.9521	0.9278		19.5	20.0	-2.6	25.0
Perfluoroheptanoic acid (PFHpA)	AveID	1.026	1.007		19.6	20.0	-1.9	25.0
Perfluorohexanesulfonic acid (PFHxS)	AveID	1.082	0.9914		16.7	18.2	-8.4	25.0
6:2FTS	AveID	0.8958	0.8626		18.3	19.0	-3.7	25.0
Perfluoroheptanesulfonic Acid (PFHpS)	AveID	1.122	1.240		21.0	19.0	10.5	25.0
Perfluorooctanoic acid (PFOA)	AveID	1.067	1.052		19.7	20.0	-1.4	25.0
Perfluorononanoic acid (PFNA)	AveID	1.018	0.9756		19.2	20.0	-4.2	25.0
Perfluorooctanesulfonic acid (PFOS)	AveID	1.057	1.052		18.5	18.6	-0.5	25.0
8:2FTS	AveID	0.9107	0.9022		19.0	19.2	-0.9	25.0
Perfluorooctane Sulfonamide (FOSA)	AveID	0.9018	0.9255		20.5	20.0	2.6	25.0
Perfluorodecanoic acid (PFDA)	AveID	0.9799	0.9566		19.5	20.0	-2.4	25.0
N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA)	AveID	0.9100	0.9192		20.2	20.0	1.0	25.0
Perfluorodecanesulfonic acid (PFDS)	AveID	0.6225	0.6224		19.3	19.3	-0.0	25.0
N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)	AveID	0.8488	0.8608		20.3	20.0	1.4	25.0
Perfluoroundecanoic acid (PFUnA)	L2ID		1.088		21.1	20.0	5.6	25.0
MeFOSA	AveID	0.9183	0.9093		19.8	20.0	-1.0	25.0
Perfluorododecanoic acid (PFDoA)	AveID	0.9292	0.9671		20.8	20.0	4.1	25.0
N-EtFOSA-M	AveID	0.9274	0.9434		20.3	20.0	1.7	25.0
Perfluorotridecanoic Acid (PFTriA)	AveID	0.8514	0.8846		20.8	20.0	3.9	25.0
Perfluorotetradecanoic acid (PFTeA)	AveID	1.922	1.824		19.0	20.0	-5.1	25.0
Perfluoro-n-hexadecanoic acid (PFHxDA)	L2ID		0.9356		23.0	20.0	14.9	25.0
Perfluoro-n-octadecanoic acid (PFODA)	AveID	0.7652	0.9256		24.2	20.0	21.0	25.0
13C4 PFBA	Ave	156025	204655		65.6	50.0	31.2	50.0
13C5 PFPeA	Ave	110496	147166		66.6	50.0	33.2	50.0
13C2 PFHxA	Ave	101156	140270		69.3	50.0	38.7	50.0
13C4-PFHpA	Ave	83824	125528		74.9	50.0	49.8	50.0
1802 PFHxS	Ave	137438	184352		63.4	47.3	34.1	50.0
M2-6:2FTS	Ave	47560	63655		63.6	47.5	33.8	50.0

Lab Name: TestAmerica Sacramento Job No.: 320-29732-1

SDG No.:

Lab Sample ID: <u>CCV 320-176487/15</u> Calibration Date: <u>07/27/2017 22:25</u>

Instrument ID: A8_N Calib Start Date: 07/23/2017 13:10

GC Column: GeminiC18 3×100 ID: 3.00 (mm) Calib End Date: 07/23/2017 13:58

Lab File ID: 2017.07.27C_015.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE CF	CF	MIN CF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
13C4 PFOA	Ave	82143	110027		67.0	50.0	33.9	50.0
13C4 PFOS	Ave	108200	128018		56.6	47.8	18.3	50.0
13C5 PFNA	Ave	65740	85832		65.3	50.0	30.6	50.0
13C8 FOSA	Ave	182802	213697		58.5	50.0	16.9	50.0
M2-8:2FTS	Ave	36500	46996		61.7	47.9	28.8	50.0
13C2 PFDA	Ave	55836	71382		63.9	50.0	27.8	50.0
d3-NMeFOSAA	Ave	21732	28005		64.4	50.0	28.9	50.0
13C2 PFUnA	Ave	40729	50596		62.1	50.0	24.2	50.0
d5-NEtFOSAA	Ave	21931	28897		65.9	50.0	31.8	50.0
d-N-MeFOSA-M	Ave	47115	54532		57.9	50.0	15.7	50.0
13C2 PFDoA	Ave	44655	51382		57.5	50.0	15.1	50.0
d-N-EtFOSA-M	Ave	48834	56408		57.8	50.0	15.5	50.0
13C2-PFTeDA	Ave	81216	97684		60.1	50.0	20.3	50.0
13C2-PFHxDA	Ave	41307	49721		60.2	50.0	20.4	50.0

Lab Name: TestAmerica Sacramento Job No.: 320-29732-1

Lab Sample ID | Client Sample ID | Method Chain | Basis | GrossWeight

SDG No.:

Batch Number: 174599 Batch Start Date: 07/18/17 07:22 Batch Analyst: Branscum, Cassie

Batch Method: 3535 Batch End Date: 07/20/17 21:40

MB 320-174599/1		3535 , 537				250 mL	0.50 mL	500 uL	
		(Modified)							
LCS		3535 , 537				250 mL	0.50 mL	500 uL	500 uL
320-174599/2		(Modified)							
LCSD		3535 , 537				250 mL	0.50 mL	500 uL	500 uL
320-174599/3		(Modified)							
320-29732-A-4	TP-PFC-019-TPE-D	3535 , 537	Т	285.36 g	26.98 g	258.4 mL	0.50 mL	500 uL	
l l		(Modified)		-					
	01' O1. TD	M	B ' -	2 2 1 0					
	01' O1. TD	M	B ' -	2 2 1 0					1
Lab Sample ID	Client Sample ID		Basis	2					
-	Client Sample ID	3535, 537	Basis	Time off the					
MB 320-174599/1	Client Sample ID	3535, 537 (Modified)	Basis	Time off the N-evap: 7:48 pm					
MB 320-174599/1 LCS	Client Sample ID	3535, 537 (Modified) 3535, 537	Basis	Time off the N-evap: 7:48 pm Time off the					
Lab Sample ID MB 320-174599/1 LCS 320-174599/2	Client Sample ID	3535, 537 (Modified)	Basis	Time off the N-evap: 7:48 pm					
MB 320-174599/1 LCS 320-174599/2	Client Sample ID	3535, 537 (Modified) 3535, 537	Basis	Time off the N-evap: 7:48 pm Time off the					
MB 320-174599/1 LCS 320-174599/2 LCSD	Client Sample ID	3535, 537 (Modified) 3535, 537 (Modified)	Basis	Time off the N-evap: 7:48 pm Time off the N-evap: 7:30 pm					
MB 320-174599/1 LCS	Client Sample ID TP-PFC-019-TPE-D	3535, 537 (Modified) 3535, 537 (Modified) 3535, 537	Basis	Time off the N-evap: 7:48 pm Time off the N-evap: 7:30 pm Time off the					

TareWeight

InitialAmount

FinalAmount

The pound sign (#) in the amount added field denotes that the reagent was used undiluted. All calculations are performed using the stated concentration for this reagent.

LCPFCSP 00100

LCMPFCSU 00081

Lab Name: TestAmerica Sacramento Job No.: 320-29732-1

SDG No.:

Batch Number: 174599 Batch Start Date: 07/18/17 07:22 Batch Analyst: Branscum, Cassie

Batch Method: 3535 Batch End Date: 07/20/17 21:40

	Batch Notes
Balance ID	QA-070
H2O ID	7/17/17
Hexane ID	958899
Manifold ID	12,13
Methanol ID	973171
Sodium Hydroxide ID	966118
Pipette ID	N32728F
Analyst ID - Reagent Drop	ССВ
Analyst ID - SU Reagent Drop	CCB
Analyst ID - SU Reagent Drop Witness	NSH
Solvent Lot #	976948
Solvent Name	0.3% NH4OH/MeOH
SOP Number	WS-LC-0025
SPE Cartridge Type	WAX 500mg
Solid Phase Extraction Disk ID	003036333A

Basis	Basis Description
Т	Total/NA

Lab Name: TestAmerica Sacramento Job No.: 320-29732-1

SDG No.:

Batch Number: 175074 Batch Start Date: 07/20/17 09:14 Batch Analyst: Santos, Jonathan

Batch Method: 3535 Batch End Date: 07/24/17 22:05

Lab Sample ID	Client Sample ID	Method Chain	Basis	GrossWeight	TareWeight	InitialAmount	FinalAmount	LCMPFCSU 00081	LCPFCSP 00100
MB 320-175074/1		3535, 537				250.00 mL	0.50 mL	500 uL	
		(Modified)							
LCS		3535, 537				250.00 mL	0.50 mL	500 uL	500 uL
320-175074/2		(Modified)							
LCSD		3535 , 537				250.00 mL	0.50 mL	500 uL	500 uL
320-175074/3		(Modified)							
320-29732-A-1	TP-PFC-019-TPI	3535, 537	Т	284.68 g	26.67 g	258 mL	0.50 mL	500 uL	
		(Modified)			_				
320-29732-A-2	TP-PFC-019-MID-C	3535 , 537	Т	279.04 g	27.01 g	252 mL	0.50 mL	500 uL	
	ARBON	(Modified)		_	_				
320-29732-A-3	TP-PFC-019-TPE	3535 , 537	Т	281.97 g	27.36 g	254.6 mL	0.50 mL	500 uL	
		(Modified)							

Batch	Notes
Balance ID	QA-070
H2O ID	7/17/17
Hexane ID	958901
Manifold ID	2, 8
Methanol ID	983105
Sodium Hydroxide ID	988541
Pipette ID	N32728F
Analyst ID - Reagent Drop	НЈА
Analyst ID - SU Reagent Drop	НЈА
Analyst ID - SU Reagent Drop Witness	JNS
Solvent Lot #	987338
Solvent Name	0.3% NH4OH/MeOH
SOP Number	WS-LC-0025
SPE Cartridge Type	WAX 500mg
Solid Phase Extraction Disk ID	003036333A

Basis	Basis Description
T	Total/NA

Lab Name: TestAmerica Sacramento Job No.: 320-29732-1

SDG No.:

Batch Number: 175097 Batch Start Date: 07/20/17 10:13 Batch Analyst: Branscum, Cassie

Batch Method: 3535 Batch End Date: 07/22/17 12:30

Lab Sample ID	Client Sample ID	Method Chain	Basis	GrossWeight	TareWeight	InitialAmount	FinalAmount	LCMPFC2SU 00025	LCMPFCSU 00081
MB 320-175097/1		3535, 537				250 mL	0.50 mL	500 uL	500 uL
		(Modified)							
LCS		3535 , 537				250 mL	0.50 mL	500 uL	500 uL
320-175097/2		(Modified)							
LCSD		3535, 537				250 mL	0.50 mL	500 uL	500 uL
320-175097/3		(Modified)							
320-29732-C-1	TP-PFC-019-TPI	3535, 537	Т	283.61 g	27.32 g	256.3 mL	0.50 mL	500 uL	500 uL
		(Modified)			_				
320-29732-C-2	TP-PFC-019-MID-C	3535, 537	Т	278.12 g	27.30 g	250.8 mL	0.50 mL	500 uL	500 uL
	ARBON	(Modified)			_				
320-29732-C-3	TP-PFC-019-TPE	3535, 537	Т	286.52 g	26.98 q	259.5 mL	0.50 mL	500 uL	500 uL
		(Modified)			_				

Lab Sample ID	Client Sample ID	Method Chain	Basis	LCPFC2SP 00032	LCPFCSP 00100	AnalysisComment		
MB 320-175097/1		3535, 537						
		(Modified)						
LCS		3535 , 537		500 uL	500 uL			
320-175097/2		(Modified)						
LCSD		3535 , 537		500 uL	500 uL			
320-175097/3		(Modified)						
320-29732-C-1	TP-PFC-019-TPI	3535 , 537	Т					
		(Modified)						
320-29732-C-2	TP-PFC-019-MID-C	3535, 537	Т			Milky white		
	ARBON	(Modified)				samples after		
						FV		
320-29732-C-3	TP-PFC-019-TPE	3535 , 537	Т			Milky white		
		(Modified)				samples after		
						FV		

Lab Name: TestAmerica Sacramento Job No.: 320-29732-1

SDG No.:

Batch Number: 175097 Batch Start Date: 07/20/17 10:13 Batch Analyst: Branscum, Cassie

Batch Method: 3535 Batch End Date: 07/22/17 12:30

	Batch Notes
Balance ID	QA-070
H2O ID	7/17/17
Hexane ID	981623
Manifold ID	13,14
Methanol ID	983105
Sodium Hydroxide ID	988541
Pipette ID	N32728F
Analyst ID - Reagent Drop	CCB
Analyst ID - SU Reagent Drop	CCB
Analyst ID - SU Reagent Drop Witness	NSH
Solvent Lot #	987338
Solvent Name	0.3% NH4OH/MeOH
SOP Number	WS-LC-0025
SPE Cartridge Type	WAX 500mg
Solid Phase Extraction Disk ID	003036333A

Basis	Basis Description
Т	Total/NA

Lab Name: TestAmerica Sacramento Job No.: 320-29732-1

SDG No.:

Batch Number: 175742 Batch Start Date: 07/25/17 09:11 Batch Analyst: Santos, Jonathan

Batch Method: 3535 Batch End Date: 07/27/17 14:07

Lab Sample ID	Client Sample ID	Method Chain	Basis	GrossWeight	TareWeight	InitialAmount	FinalAmount	LCMPFC ALL SU	LCPFCSP 00110
	-							00004	
MB 320-175742/1		3535, 537				250.00 mL	0.50 mL	500 uL	
		(Modified)							
LCS		3535, 537				250.00 mL	0.50 mL	500 uL	500 uL
320-175742/2		(Modified)							
LCSD		3535 , 537				250.00 mL	0.50 mL	500 uL	500 uL
320-175742/3		(Modified)							
320-29732-C-4	TP-PFC-019-TPE-D	3535, 537	Т	272.84 g	27.30 g	245.5 mL	0.50 mL	500 uL	
		(Modified)							

	Batch Notes
Balance ID	QA-070
H2O ID	7/21/17
Hexane ID	981625
Manifold ID	2, 8
Methanol ID	988835
Sodium Hydroxide ID	988541
Pipette ID	MD05306
Analyst ID - Reagent Drop	CCB
Analyst ID - SU Reagent Drop	CCB
Analyst ID - SU Reagent Drop Witness	JNS
Solvent Lot #	987338
Solvent Name	0.3% NH4OH/MeOH
SOP Number	WS-LC-0025
SPE Cartridge Type	WAX 500mg
Solid Phase Extraction Disk ID	003237040A

Basis	Basis Description
Т	Total/NA

62 RX~F05A

Batch Number: 320-174599

Method Code: 320-3535_PFC-320

Aqueous Extraction Analysis Sheet

(To Accompany Samples to Instruments)

Analyst: Branscum, Cassie

ps 7/21/17

Batch Open: 7/18/2017 7:22:00AM

Batch End: 7/20/2017 9:40:00PM

Solid-Phase Extraction (SPE)

	Input Sample Lab ID (Analytical Method)	SDG (Job #)	GrossWt TareWt	InitAmnt FinAmnt	Rcvd	PHs Adj1	Adj2	Due Date	Analytical TAT	Dlv Rank	Comments	Output Sample Lab ID
1	MB~320-174599/1 N/A	N/A		250 mL				N/A	N/A	N/A	Time off the N-evap: 7:48 pm	Ministeratīrās Drautivārāk interniju iz arkitik
	1 00 000 47 47 600			0.50 mL							pm FE Co	1/05/17
2	LCS~320-174599/2 N/A	N/A		250 mL				N/A	N/A	N/A	Time off the N-evap: 7:30 RT	
				0.50 mL							pm KI	
3 Page	LCSD~320-174599/3 N/A	N/A		250 mL			-	N/A	N/A	N/A	Time off the N-evap: 7:15	
न 				0.50 mኒ				i			N-evap: 7:15 PT	
4 5	320-29732-A-4 (PFC_IDA_DOD5)	N/A (320-29732-1)	285.36 g	258.4 mL	-			7/23/17	16_Days	4	Time off the N-evap: 7:00	
#			26.98 g	0.50 mL							pm	
5	160-23181-A-1 (PFC_IDA)	N/A (160-23181-1)	286.70 g	258.6 mL				7/25/17	12_Days	4	Time off the N-evap: 8:00	
											pm (Cloudy yellow	
			28.09 g	0.50 mL							sample)	
6	160-23181-A-2 (PFC_IDA)	N/A (160-23181-1)	279.64 g	252.1 mL				7/25/17	12_Days	4	Time off the N-evap: 6:00	
L			27.57 g	0.50 mL							pm	
7	320-29816-A-1 (PFC_IDA)	N/A (320-29816-1)	279.11 g	252.2 mL				7/28/17	12_Days	4	Time off the N-evap: 8:26	
L			26.94 g	0.50 mL							pm	
8	320-29816-A-2 (PFC_IDA)	N/A (320-29816-1)	285.52 g	257.2 mL				7/28/17	12_Days	4	Time off the N-evap: 6:48	
			28.32 g	0.50 mL		İ					pm	

(To Accompany Samples to Instruments)

Batch Number: 320-174599

Analyst: Branscum, Cassie

Batch Open: 7/18/2017 7:22:00AM

Batch End: 7/20/2017 9:40:00PM

Method Code	: 320-3535	_PFC-320
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	200 00400 714							Bat	ch End: //20/2017 9:40:00PM
9	320-29409-B-1 (PFC_IDA_DOD5)	N/A (320-29409-1)	285.61 g	257.7 mL	7/7/17	8_Days	4	Time off the N-evap: 6:40 pm (Cloudy	3 2 0 - 2 9 4 8 9 - B - T - B
			27.93 g	0.50 mL		•		white)	
10	320-29409-B-2 (PFC_IDA_DOD5)	N/A (320-29409-1)	281.00 g	253 mL	7/7/17	8_Days	4	Time off the N-evap: 6:40	Minitikinitihininihini
	320-29409-B-4	- NA	28.03 g	0.50 mL				pm (Cloudy white)	
11	(PFC_IDA_DOD5)	N/A (320-29409-1)	293.27 g	266 mL	7/7/17	8_Days	4	Time off the N-evap: 7:00	
	320-29409-B-4~MS	N/A	27.25 g	0.50 mL				pm (Cloudy white)	
12 dag	(DEC IDA DODE)	(320-29409-1)	280.54 g	253.3 mL	7/7/17	8_Days	4	Time off the N-evap: 5:36	
13 age 1046 o	320-29409-B-4~MSD	N/A	27.28 g	0.50 mL				pm 1st one to come off	
	(F1 0_IDA_DOD3)	(320-29409-1)	272.30 g	245.4 mL	7/7/17	8_Days	4	Time off the N-evap: 7:30	3 2 0 - 2 9 4 0 9 - B - 4 - F M S 5 1
4			26.89 g	0.50 mL				pm (Cloudy white)	
14	320-29713-A-1 (PFC_IDA)	Saint Gobain-Pipe Cleaning Aqtivities	264.12 g	236.4 mL	7/25/17	12_Days	2	Time off the N-evap: 8;26	
			27.74 g	0.50 mL				pm	
15	320-29713-A-2 (PFC_IDA)	Saint Gobain-Pipe CleaningoAqtivities	280.48 g	252.6 mL	7/25/17	12_Days	2	Time off the N-evap: 8:00	
			27.90 g	0.50 mL				pm	
16	320-29713-A-3 (PFC_IDA)	Saint Gobain-Pipe Cleaningo Aquivities	274.81 g	247.3 mL	7/25/17	12_Days	2	Time off the N-evap: 7:48 5X	Main Tabun na Tabuh na Tabun an Tabun a
L			27.50 g	0.50 mL				pm	To the second se
17	320-29409-B-3 (PFC_IDA_DOD5)	N/A (320-29409-1)	290.75 g	263.2 mL	7/7/17	8_Days	4	Time off the N-evap: 6:48	ANTANIA INTERNATIONAL INTERNAT
			27.55 g	0.50 mL				pm (Cloudy white)	

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TestAmerica Sacramento

(To Accompany Samples to Instruments)

Batch Number: 320-174599

Method Code: 320-3535_PFC-320 Analyst: Branscum, Cassie

Batch Open: 7/18/2017 7:22:00AM

Batch End: 7/2017 21140

Solid-Phase Extraction (SPE)

	Input Sample Lab ID (Analytical Method)	SDG (Job #)	GrossWt TareWt	InitAmnt FinAmnt	Rcvd	PHs Adj1	Adj2	Due Date	Analytical TAT	Dlv Rank	Comments	Output Sample Lab ID
1	N/A	N/A		250 mL				N/A	N/A	N/A	port 1	MANATA INTERPRETATION
- 1	00 000 47450010			0.50 mL						İ	7:48	1001 M G 3 Z W - 1 / 4 5 9 9 / 1 - A(IIII)
2	LCS~320-174599/2 N/A	N/A		250 mL				N/A	N/A	N/A	port 2	
	1 000 000 47450010			0.50 mL							7:30	
3	LCSD~320-174599/3 N/A	N/A		250 mL				N/A	N/A	N/A	P0123	
ᆲ	000 00700			0.50 mL							7:15	IMPLES D 320-174599/3-AIGH
age it	320-29732-A-4 (PFC_IDA_DOD5)	N/A (320-29732-1)	285.36 g	258.4 mL				7/23/17	16_Days	4	por 4	
5			26.98 g	0.50 mL							7:00 pm	111 3 2 0 - 2 9 7 3 2 - A - 4 - AIMI
5 d	160-23181-A-1 (PFC_IDA)	N/A (160-23181-1)	286.70 g	258.6 mL				7/25/17	12_Days	4	port5	
† 04			28.09 g	0.50 mL							8:00	redy yellow
6	160-23181-A-2 (PFC_IDA)	N/A (160-23181-1)	279.64 g	252.1 mL				7/25/17	12_Days	4	port 6	
L			27.57 g	.0.50 mL							(Lepm)	100 1 6 0 - 2 3 1 8 1 - A - 2 - B100
7	320-29816-A-1 (PFC_IDA)	N/A (320-29816-1)	279.11 g	252.2 mL				7/28/17	12_Days	4	por 7	
Ļ	0000000		26.94 g	0.50 mL							8.24	11141 3 2 19 - 2 9 8 1 6 - A - 1 - B(IIII
8	320-29816-A-2 (PFC_IDA)	(320-29816-1)		257.2 mL				7/28/17	12_Days	4	pur 8	Matrix in 18 505 fation in in institution in in
L	320-29409-B-1		28.32 g	0.50 mL							0:48	2 2 0 - 2 9 0 1 0 - A - 2 - Billill
9	320-29409-B-1 (PFC_IDA_DOD5)	N/A (320-29409-1)	285.61 g	257.7 mL	-			7/7/17	8_Days	4	100ng 9	
	200 0045		27.93 g	0.50 mL							10:40 N	TILKY white
10	320-29409-B-2 (PFC_IDA_DOD5)	N/A (320-29409-1)	281.00 g	253 mL				7/7/17	8_Days	4	port 10	
			28.03 g	0.50 mL							0:40 m	
- 1									ĺ		3.70 7.10	

Printed: 7/18/2017

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TestAmerica Sacramento

(To Accompany Samples to Instruments)

Batch Number: 320-174599

Method Code: 320-3535_PFC-320

Analyst: Branscum, Cassie

Batch Open: 7/18/2017 7:22:00AM

Batch End:

ſ	320-29409-B-4	N/A			 					
11	(PFC_IDA_DOD5)	(320-29409-1)	293.27 g	266 mL			7/7/17	8_Days	4	POR 11
ļ			27.25 g	0.50 mL						7:00 pm murky white
12	320-29409-B-4~MS (PFC_IDA_DOD5)	N/A (320-29409-1)	280.54 g	253.3 mL			7/7/17	8_Days	4	POR 12 HON HUSB HE BUCKEN HOLD HIS HER HOLD HOLD HER HELD HOLD HER HELD HOLD HER HELD HOLD HELD HELD HELD HELD HELD HELD HELD HE
			27.28 g	0.50 mL						cistone to will clary white
13	320-29409-B-4~MSD (PFC_IDA_DOD5)	N/A (320-29409-1)	272.30 g	245.4 mL			7/7/17	8_Days	4	POR 13 MARININANANANANANANANANANANANANANANANANAN
Į			26.89 g	0.50 mL						7:30 claudy white
14	320-29713-A-1 (PFC_IDA)	Saint Gobain-Pipe CleaniosoAetivities	264.12 g	236.4 mL			7/25/17	12_Days	2	por 14
			27.74 g	0.50 mL						8:24
15	320-29713-A-2 (PFC_IDA)	Saint Gobain-Pipe CleaningoActivities	280.48 g	252.6 mL			7/25/17	12_Days	2	POP 15
3			27.90 g	0.50 mL						8:00
16e 10	320-29713-A-3 (PFC_IDA)	Saint Gobain-Pipe CleaningoActivities	274.81 g	247.3 mL			7/25/17	12_Days	2	
#			27.50 g	0.50 mL					7	Ce: 48 closed y hite
17 9 1	320-29409-B-3 (PFC_IDA_DOD5)	N/A (320-29409-1)	290.75 g	263.2 mL			7/7/17	8_Days	4	
4			27.55 g	0.50 mL						7:48
18	320-29409-B-5 (PFC_IDA_DOD5)	N/A (320-29409-1)	286.94 g	260 mL			7/7/17	8_Days	4	POP18 RT
L			26.97 g	0.50 mL						(4:08pm 10As
19		N//\					N/A	N/A	N/A	DD17 19
ľ	N/A						14//1	10/7		
}		N/A								
20	N/A						N/A	N/A	N/A	por 20
L		<u>. </u>	<u> </u>	<u> </u>	l			<u> </u>	<u> </u>	

(To Accompany Samples to Instruments)
Analyst: Branscum, Cassie

Batch Number: 320-174599

Method Code: 320-3535_PFC-320

Daten Open. 7711

Batch Open: 7/18/2017 7:22:00AM

Batch End:

	Batch Notes
Manifold ID	12,13
Methanol ID	973171
Hexane ID	958899
Sodium Hydroxide ID	966118
First Start time	NA
First End time	NA
SPE Cartridge Type	WAX 500mg
Solid Phase Extraction Disk ID Balance ID H2O ID Pipette ID	003036333A
Balance ID	QA-070
H20 ID	7/17/17
Pipette ID	N32728F
Solvent Name	0.3% NH4OH/MeOH
Solvent Lot #	976948
Analyst ID - Reagent Drop	ССВ
Analyst ID - SU Reagent Drop	ССВ
Analyst ID - SU Reagent Drop Witness	NSH
Acid Name	
Acid ID	NA
Reagent ID	NA
Reagent Lot Number	NA
SOP Number	WS-LC-0025

(To Accompany Samples to Instruments)

Batch Number: 320-174599

Method Code: 320-3535_PFC-320

Analyst: Branscum, Cassie

Batch Open: 7/18/2017 7:22:00AM

Batch End:

Batch Comment

		-	Comments								
	320-29409-B-1	D 10									
	320-29409-B-2	Rework Comments:	Low 13C8 FOSA recoveries.								
	320-29409-B-4	Rework Comments:	Low 13C8 FOSA recoveries.								
	320-29409-B-4~MS	Rework Comments:	Low 13C8 FOSA recoveries.								
		Rework Comments:	Low 13C8 FOSA recoveries.								
Page	320-29409-B-4~MSD	Rework Comments:	Low 13C8 FOSA recoveries.								
age 1050 of	320-29409-B-3	Rework Comments:	Low 13C8 FOSA recoveries.								
0 of 1 1 0	320-29409-B-5		Low 13C8 FOSA recovery.								

DODCMD_ID INSTALLATION_ID SDG	SITE_NAME NORM_SITE_NAM	IE LOCATION_NAME	LOCATION_TYPE_DESC	COORD_X C	COORD_Y	CONTRACT_ID	DO_CTO_NUMBER	CONTR_NAME	SAMPLE_NAME	SAMPLE_MATRIX_DESC	SAMPLE_TYPE_DESC	COLLECT_DATE	ANALYTICAL_METHOD	ANALYTICAL_METHOD_GRP_DESC
MID_ATLANTIC BRUNSWICK_NAS 320-29732-1	SITE 00011 SITE 00011	TP-PFC-EFFLUENT	Monitoring well	3015831.52 3	384866.155	N6247016D9008	WE21	TETRA TECH, INC.	TP-PFC-019-TPE	Ground water	Normal (Regular)	6-Jul-17	537	Perfluoroalkyl Compounds
MID_ATLANTIC BRUNSWICK_NAS 320-29732-1	SITE 00011 SITE 00011	TP-PFC-EFFLUENT	Monitoring well	3015831.52 3	384866.155	N6247016D9008	WE21	TETRA TECH, INC.	TP-PFC-019-TPE-D	Ground water	Field duplicate	6-Jul-17	537	Perfluoroalkyl Compounds
MID_ATLANTIC BRUNSWICK_NAS 320-29732-1	SITE 00011 SITE 00011	TP-PFC-INFLUENT	Monitoring well	3015831.52 3	384866.155	N6247016D9008	WE21	TETRA TECH, INC.	TP-PFC-019-TPI	Ground water	Normal (Regular)	6-Jul-17	537	Perfluoroalkyl Compounds
MID_ATLANTIC BRUNSWICK_NAS 320-29732-1	SITE 00011 SITE 00011	TP-PFC-MIDPOINT	Monitoring well	3015831.52 3	384866.155	N6247016D9008	WE21	TETRA TECH, INC.	TP-PFC-019-MID-CARBON	Ground water	Normal (Regular)	6-Jul-17	537	Perfluoroalkyl Compounds